

# Chemical Week



January 17, 1959

Antibiotics pricing on trial.  
FTC hearings get under way  
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◀ New plant in your '59 plans?  
Smart accounting can cut ex-  
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Unfettered fellowship money  
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Maleic marketing squeeze.  
New capacity may outpace  
demand by 20% in '65 . p. 82

STEVENSON RICE  
UNIVERSITY MICROFILMS  
SERIALS ACQUISITION  
JAN 17 1959  
ANN ARBOR MICH



## How to put witch doctors out of work

Today, witch doctors play second drum to the magic of modern disease fighters such as Shell Chemical's insecticide, *dieldrin*.

Used against malaria carrying mosquitoes the world over, dieldrin helps eradicate an age-old scourge. Dieldrin is so effective that three ounces protect a home against mosquitoes for as long as six months.

Thanks to powerful, modern insecticides such as Shell Chemical's dieldrin, the number of people stricken by malaria has been cut fifty per cent in just ten years.

Rescuing many fertile areas of the world by checking insect-borne disease is one way Shell contributes to world health, industry and agriculture.

### Shell Chemical Corporation

*Chemical Partner of Industry and Agriculture*

NEW YORK







## New ideas for paint... with EPOXIDE 201

*One of 4 new diepoxides  
from CARBIDE research*

Fast acid reactivity is one of the major differences between Epoxide 201 and conventional epoxy resins. This new diepoxide can be used to cross link polymers containing free carboxyl groups or to reduce free acid content. In addition, Epoxide 201's low viscosity makes it easier to handle. Development quantities of Epoxide 201 are now available for your evaluation in epoxy, vinyl ester, acrylic, polyester, and alkyd resin coatings as well as for casting uses.

CARBIDE now offers four diepoxides for use in coatings and castings. In addition to Epoxide 201 you'll want to investigate these three other diepoxides—

**Dicyclopentadiene Dioxide**—is of particular interest for heat resistant plastics. For the first time in the epoxy resin industry—an easy-to-handle resin system yielding heat distortion temperatures in the range of 300° C., even after long term heat aging.

**Dipentene Dioxide**—has fast acid reactivity for cross linking. This, plus its economy, makes it of particular interest for coatings.

**Vinylcyclohexene Dioxide**—to effectively reduce epoxy resin viscosities without lowering heat distortion temperatures.

In evaluating these new diepoxides, talk to your CARBIDE Technical Representative. Ask him for copies of the two new research reports—"Resin Forming Reactions of Epoxide 201" and "High Temperature Epoxy Resins", along with a complete package of technical information on CARBIDE's diepoxides, or write to: Union Carbide Chemicals Company, Division of Union Carbide Corporation, Room 328, Department W, 30 East 42nd Street, New York 17, New York.

"Union Carbide" is a registered trade mark of UCC.

**UNION CARBIDE  
CHEMICALS COMPANY**

DIVISION OF



CORPORATION



# GULF BENZENE

Very soon now, we'll be ready to fill your volume requirements for high quality nitration grade benzene. We'll ship, by barge or tank car, from our new plant at Port Arthur, Texas . . . the world's largest benzene production unit. Toluene will also be available. We invite you to investigate this basic source of quality benzene, and to take advantage of Gulf technical service. For complete information, write or phone.

**PETROCHEMICALS DEPARTMENT** • Gulf Oil Corporation • Gulf Building, Pittsburgh 30, Pa.

**QUALITY CHEMICALS** *from* **PETROLEUM**

Aromatics • Ethylene • Propylene • Higher Olefins • Oxo Products • Propylene Trimer and Tetramer • Sulphur



## TOP OF THE WEEK

JANUARY 17, 1959

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- ▶ **Prospects are dim for speeding collections** in CPI—and some segments may find payments slowing further .....p. 54
- ▶ **Equipment salvage is multimillion-dollar business** for process firms; here's how it can pay off for you .....p. 73
- ▶ **Maker of auto lube specialties eyes market in the sky**, readies "frictionproofing" airplane engine additive .....p. 89

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**23 Monsanto and Heyden Newport tangle with M. W. Kellogg in three-suit legal fight over design of Texas City methanol unit.**

**23 Catalin gets \$2.3-million lift from Dow for special chemical expansion. Dow can convert debt into Catalin common stock equal to 20% holding.**

**24 Keeping pace with your competitors? Here's latest CPI sales and earnings data.**

**25 New model labeling bill, sponsored by MCA and three other trade groups, goes to state, federal lawmakers.**

**25 Chemical producers, shippers seek to normalize operations during continuing cold weather.**

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**58 Fewer contamination problems—feature of new internal-unloading hopper car.**

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An equipment salvage plan for your company? It has paid off for others. Here's how companies handle the job profitably.

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### 82 MARKETS

U.S. maleic anhydride capacity will stay ahead of demand through '65. Reason: 29-million-lbs./year new capacity on the way.

### 89 SPECIALTIES

Wynn Oil readies airplane-engine oil additive, slates expansion of auto-engine specialties output, too.

**90 Herbicide experts cite areas where more effective, cheaper chemical weed controls are most needed.**

### 96 BUSINESS BENCHMARKS

CW's new page of statistics for decision-making in the process industries.

**42,339 copies of this issue printed**

Vol. 84

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*Interested in Oxygen? Nitrogen? Argon?*

# Why Liquid Carbonic for its New

The Liquid Carbonic Division of General Dynamics doesn't take unnecessary chances. This prominent firm had confidence that they could rely on Messer to design and engineer a new air separation plant that would give more than just "satisfactory" results.

## ***What Happened?***

American Messer met the production schedule, and in February, this Liquid Carbonic plant at Urbana, Ohio went on stream. This tonnage plant is exceeding specifications—it can and does turn out liquid products at purities much higher than specified. The plant is also exceeding specifications in capacity and output.

Generous design margins and comprehensive automatic instrumentation give exceptional flexibility and completely stable operation at minimum operating cost.

## **You Can Depend on Messer**

Messer-engineered plants have been operating with outstanding success in the U.S.A. since 1913 and for more than 50 years in many other countries. Where can you profitably use tonnage oxygen, nitrogen, or argon? If you decide to build your own plant, American Messer can assure you of best value for your investment dollar. Your inquiry will be welcomed.



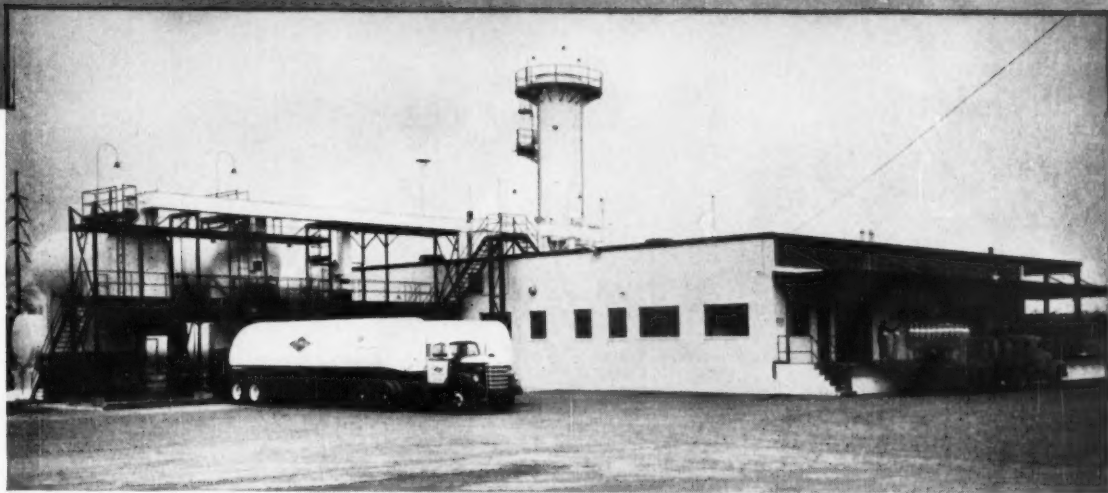
## **AMERICAN MESSER CORPORATION**

Chrysler Building • 405 Lexington Avenue • New York 17, N. Y.

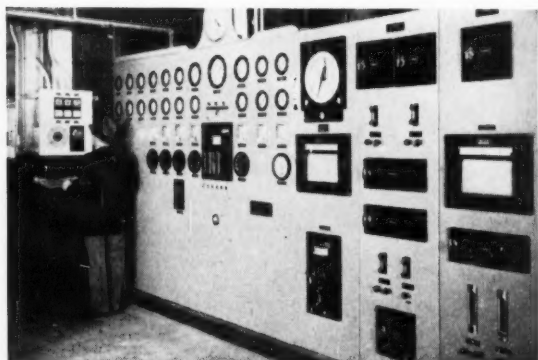
**"THERE IS NO SUBSTITUTE FOR MESSER EXPERIENCE"**



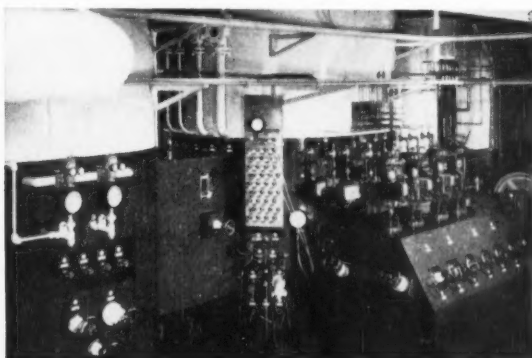
# Chose **MESSER** Oxygen Plant



**HIGHLY EFFICIENT**... View of the Urbana, Ohio plant showing the Messer fractionating column extending above the building.

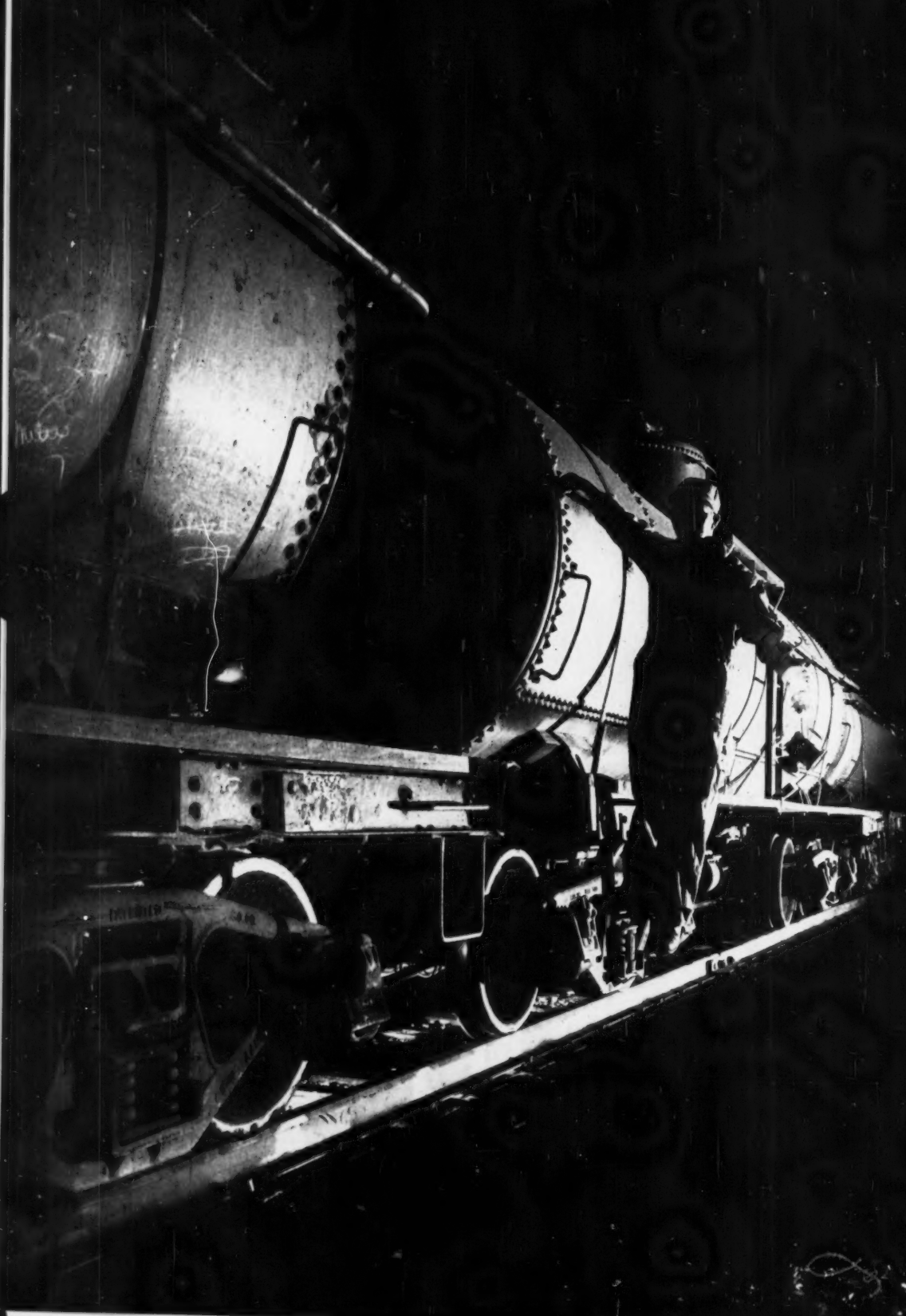


**CONTROL PANEL** indicating, recording, and controlling all important process variables shows the high degree of instrumentation typical of Messer plants.



**CONVENIENCE**—Careful piping design brings major valves to convenient, logical locations for ease of operation and maintenance. Test and sample connections are brought to a central control board.

**IT'S 2 AM...**



# IN KANKAKEE...

## and another on-time delivery of Fatty Nitrogen\* chemicals leaves the General Mills plant

This is a 24-hour a day scene at Kankakee, Illinois—nerve center of the Chemical Division of General Mills—every day, every week—supplying our industrial nation with filming cationic chemicals researched, developed and manufactured by the Chemical Division.

It's a day-by-day service—high quality long chain amines, diamines and quaternaries shipped everywhere . . . anywhere . . . and *always* on time!

**Yet tank cars are only part of the story . . . where these chemicals are going is even more important**

Fatty Nitrogen derivatives serve industrial America as:

**Textile Conditioners**—Chemical intermediates for home, commercial and industrial textile softeners. Small quantities of quaternary ammonium compounds (Aliquats) soften fabrics, minimize static, kill bacteria.

**Corrosion Inhibitors and Bactericides**—Primary and secondary amines (Alamines), N-fatty 1, 3-propylene diamines (Diams) and the quaternaries find widespread use as anti-corrosion compounds in crude oil production, transportation and storage. The quaternaries have excellent bactericidal activity, too; find application in secondary oil recovery, circulating water systems.

**Petroleum Product Additives**—Added to petroleum fuels, furnace oils, aircraft and other fuels, primary and secondary amines and diamines not only disperse color bodies and banish sludge, but actually inhibit their formation. They also improve stability, inhibit corrosion.

**Ore Flotation Reagents**—Fatty nitrogen chemicals are used extensively for recovery of non-metallic ores such as phosphate, feldspar, mica, potash. Primary fatty amines and amine acetates (Alamacs) function by selective adsorption with concentration made either by flotation of ore values or of the gangue material.

**Asphalt Anti-strippers**—The mono tall oil salt of Diam 26 offers excellent bonding characteristics in patching and seal coating asphalt paving. It promotes adhesion of paving compositions based on cutback asphalt, and prevents stripping of asphalt from the aggregate used in paving and patching compositions.

**Hard Rubber Release Agent**—General Mills primary amines are effective mold release agents for hard rubber articles, such as battery boxes. The amines help to produce a denser hard rubber product and reduce permeability.

**These filming fatty nitrogen compounds are always on stream at General Mills**



**FATTY NITRILES** *Alitriles*  
 $\text{RCN}^*$  derived from various fatty acids are long chain alkyl cyanides.

*\*R is a hydrocarbon chain of 7 to 17 carbons.*



**PRIMARY AND SECONDARY FATTY AMINES** *Alamines*  $\text{RNH}_2$  or  $(\text{R})_2\text{NH}$ . These are organic substituted ammonias and undergo typical amine reactions.



**FATTY AMINE ACETATES** *Alamacs*  $\text{RNH}_3^+ \text{CH}_3\text{COO}^-$  are the water-soluble or dispersible acetic salts of the fatty amines.



**FATTY QUATERNARY AMMONIUM COMPOUNDS** *Aliquats*  $\text{RN}(\text{CH}_3)_3^+ \text{CL}^-$  or  $\text{R}_2\text{N}(\text{CH}_3)_2^+ \text{CL}^-$  contain either one or two fatty alkyl groups.



**N-FATTY 1, 3-PROPYLENE DIAMINES** *Diams*  $\text{RNH}(\text{CH}_2)_3\text{NH}_2$  *Diams* have both a primary and secondary amine group in their structure, therefore are highly polar with strong cationic activity.

*R—is a hydrocarbon chain of 8 to 18 carbons.*

Whatever your needs in fatty nitrogen chemicals, General Mills can handle your requirements in 4,000 and 8,000 gallon tank cars, in 3,500 gallon tank trucks and 55 gallon drums.

Our staff of skilled service representatives and broad research facilities are ready to share their experience and know-how in fatty nitrogen chemistry with you. For technical details and fatty nitrogen chemical samples, please write (specifying your application): Dept. CW-1, Chemical Division, Kankakee, Illinois.

*Fatty Nitrogens • Deriphats  
Versamid Polyamide Resins • Sterols  
Genamid Epoxy Curing Agents*

## CHEMICAL DIVISION

KANKAKEE, ILLINOIS



*\*Alitriles, Alamines, Alamacs, Aliquats, Diams, and Deriphats are registered trade names of General Mills.*

**Sales Offices:** New York, Chicago, Boston, Charlotte, Philadelphia, Los Angeles, San Francisco and Houston

**Get all the facts about Fatty Nitrogens at seminars in New York, Jan. 26; Philadelphia, Jan. 27; Chicago, Jan. 28; Los Angeles, Jan. 30.**





## What's new in processing chemicals?

News has a cash value for the chemical processor. Whether it's about new products or new applications for familiar products, this news can make the difference between keeping ahead of competition and having to catch up with it. This series of chemical news notes is designed to help you keep products, processes . . . and profits up to date.

You may wish to check certain items in this advertisement and forward to those concerned in your company.

Route to:

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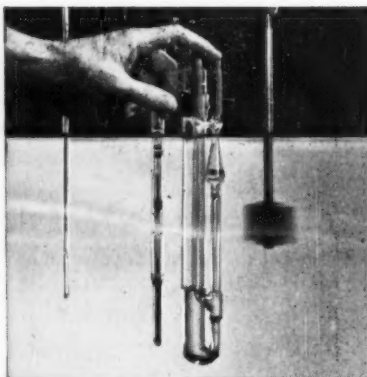
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# BIG STIR FOR BETTER SOLUTIONS CREATED BY 3 NEW METHOCEL PRODUCTS

Production managers are looking eagerly over the shoulders of their research chemists these days and nights as they work overtime to get the most out of three newly announced Methocel® (Dow methylcellulose) products.

These three new products expand the already unequalled Dow line of synthetic gums (industry's widest), making available viscosities ranging from 10 cps. to 15,000 cps. Together with new techniques for putting Methocel into solution, they promise to open whole new areas of profitable use for



New high-viscosity Methocel being measured with pinpoint accuracy with Ubbelohde viscosimeter

these water-soluble, non-ionic gums.

Reports are coming in from textile, paper, food and paint laboratories all over the country.

Here's what they're saying about . . .

**METHOCEL 60 HG**—“Better organic solubility and compatibility than other water-soluble gums yet still retains its water solubility.” “Great for industrial paint removers, alkyd modified latex paints and coatings that must lay down a film from an organic solvent for fast drying.” “Can be plasticized and made thermoplastic to heatseal coatings.” “Better emulsifier and emulsion stabilizer because it's more surface active than other water-soluble gums.”

## DOW CHEMICALS... EXCITING



### ETHYLENE AMINES

Three higher amines offer challenging potentialities as intermediates: Diethylenetriamine, triethylenetetramine, tetraethylenepentamine.



### GLYCERINE

Expanded production facilities furnishing uninterrupted supply of three grades, synthetic, USP and USP 99.5%—all of unexcelled purity.



### POLYPROPYLENE GLYCOLS

Polypropylene Glycol P2000 RG is but one of six resin grades that assure users exact degree of firmness or hardness in polyurethane production.



**METHOCEL 70 HG** — "Exceptionally good for industrial emulsions such as asphalt and other petroleum based types."

**METHOCEL 90 HG** — "Completely solved our problem of thermal gelation." "No gelling at temperatures below 90°C. (194°F.) . . . at last we can take advantage of the non-ionic, surface-active and film-forming properties of Methocel."

**METHOCEL 90 HG**, 15,000 cps—"Very low concentrations of this high viscosity product gives us efficient thickening. Should result in substantial savings."

These reports have a familiar ring to the people at Dow. That's because they read like chapter and verse from the newly published Dow handbook on Methocel. This 60-page package of facts shows the versatility of Methocel as a thickener, stabilizer, film former, emulsifier and binder. In addition to describing the new products, it also reports on established members of the Methocel family . . . MC, 65 HG, CAM, AS-2, AS-4, and AS-8. Copies are available immediately from Dow.

## After 20 years . . .

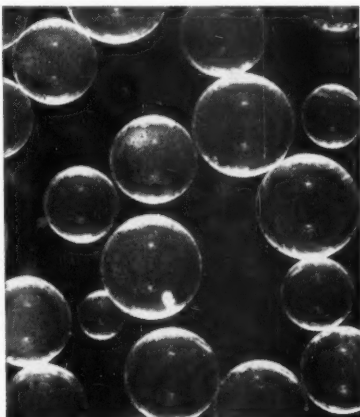
**Ion exchange resins are being 'rediscovered'**

In the 20 years or so since they were first discovered, ion exchange resins have softened oceans of water. These years of yeoman service have been worthwhile, but research chemists now probing the new uses for these resins find they've come across a basic, cost-saving industrial process with many really revolutionary uses.

"It's like discovering you've had an Einstein working as a file clerk," said one chemist. "We've found valuable new uses for ion exchange resins in concentration, conversion, fractionation, purification and catalysis."

Actually ion exchange might be considered the latest link in the chain of chemical processing evolution. Dow production and technical service personnel have geared themselves for the forthcoming expansion. Current users have found ion exchange practical and beneficial for such uses as uranium recovery, de-ionization of glycerine and sugar solutions, epoxidation catalysis, rare earth separations and recovery of metal finishing solutions such as chrome plating baths.

A big processing advantage in the ion exchange method, chemical processors are finding, is that ion exchange resins can be produced in an almost infinite variety to fit specific needs.



Increased bead strength and stability in new white cation resin, Dowex 50W.

These resins are manufactured by Dow under the trademark Dowex®. Dow technical service specialists are constantly helping chemical processors apply the principle of ion exchange to a multitude of manufacturing problems. Complete information on the various resins in the Dowex line and the countless specialized formulations possible is available from Dow.

## This settles it:

**Separan NP10 breaks flocculation bottlenecks**

When it came to separating solids from liquids, a lot of chemical processors found that their biggest industrial waste was time. But that was before Separan® NP10.

A glimpse at the record of this high-speed flocculant shows why so many processors are impressed by its performance. A uranium ore processor reports: "With Separan NP10 we can make one thickener do the work of five." A copper processor says: "Increased settling rates with Separan NP10 increased our ore processing capability 1,600 tons a day, cut unit costs, and prevented bottlenecks."

The stop-watch of a West Virginia coal operator clocked Separan NP10 doing a two hour settling job in *seven minutes*. A paper mill superintendent explained that a small amount of Separan NP10 as a filler retention aid has decreased costs \$10 per ton for 50 lb. offset bond while maintaining specifications.

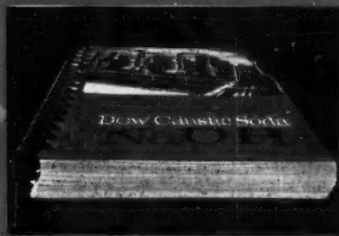
In an ever-widening variety of thickening, filtration and clarification applications, Separan NP10 is solving many problems, clarifying plant influents, providing cleaner recycle water, and increasing solids recovery. Results are continually startling new users.

As one processor put it, "We didn't even know we could improve the economics of our operation until we learned about Separan NP10. We're still amazed!"

\* \* \*

If you aren't already profiting from these and other Dow chemicals, we suggest you write for complete information to THE DOW CHEMICAL COMPANY, Chemicals Sales Department 910AM1-17, Midland, Michigan.

## POSSIBILITIES



### ALKALI

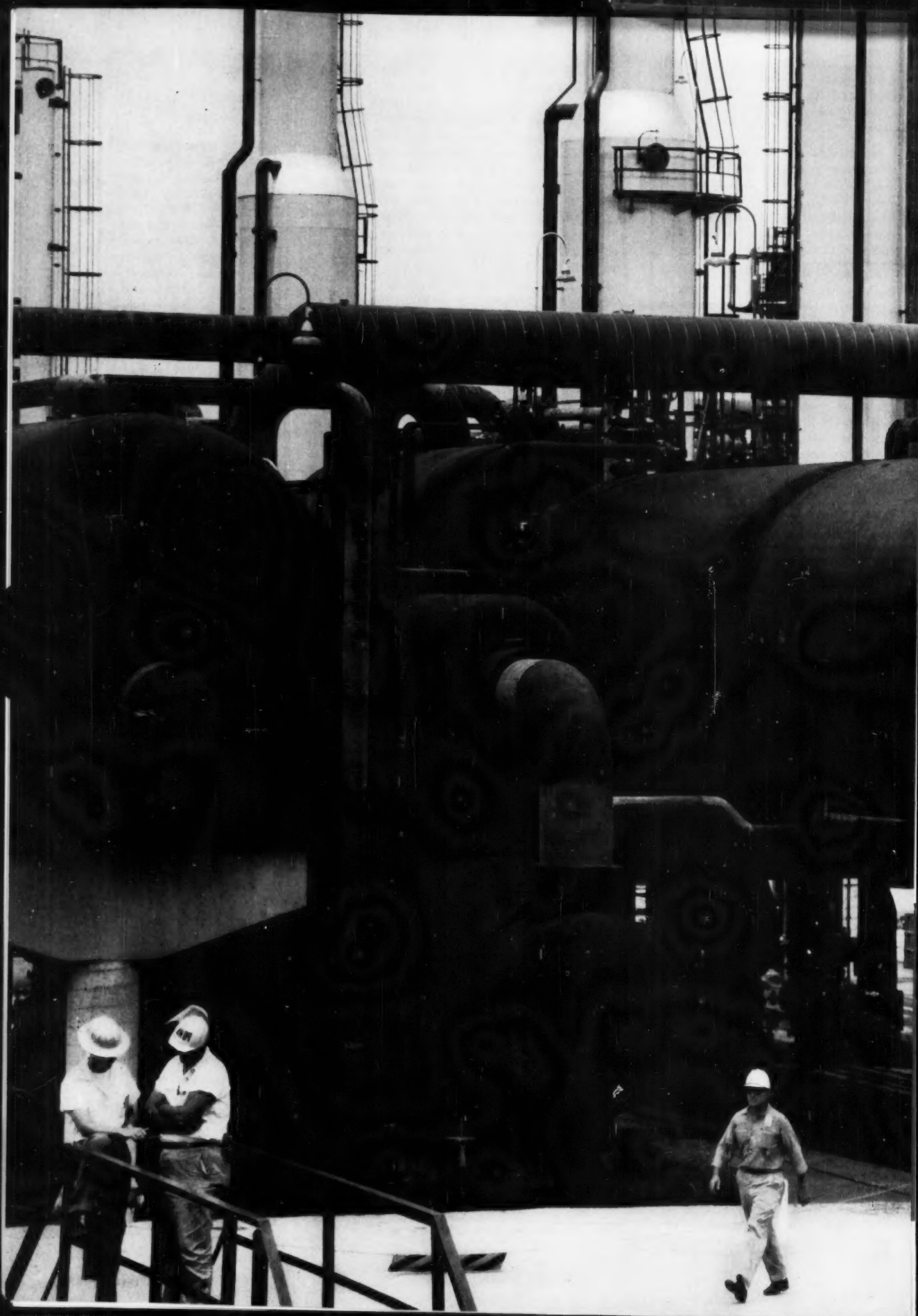
Dow Caustic Soda Handbook—complete—authoritative. If you have not already ordered your copy of this new 86-page book, send for it today.


## DOW CHEMICALS: Basic to the chemical processing industry

Alkylene Oxides, Glycols • Industrial Preservatives • Polyalkylene Glycols  
Glycol Ethers • Alkalies • Phenolic Compounds • Brominated and Chlorinated  
Aliphatic Compounds • Inorganic Acids • Halogens • Organic Acids and Esters  
Inorganic Chlorides, Bromides and Bromates • Nitrogen Compounds • Amino  
Acids • Glycerine • Salicylates • Phenyl Phosphates • Heat-Transfer Media  
Flotation and Flocculating Agents • Chelating Agents • Ion Exchange Resins  
Methylcellulose • Magnesium • Plastics • Aromatics

THE DOW CHEMICAL COMPANY  
Midland, Michigan







These Stratco Effluent Refrigeration reactors are part of the alkylation section of Texas Butadiene & Chemical Corporation's plant in Channelview, Texas. The unit obtains its butylene feed from the dehydrogenation of butane into butadiene and butylene. Depending on marketing requirements, the butylene may be used to make alkylate or recycled back into butadiene production. Alkylation capacity is 6,500 b.p.s.d.

## ALKYLATION

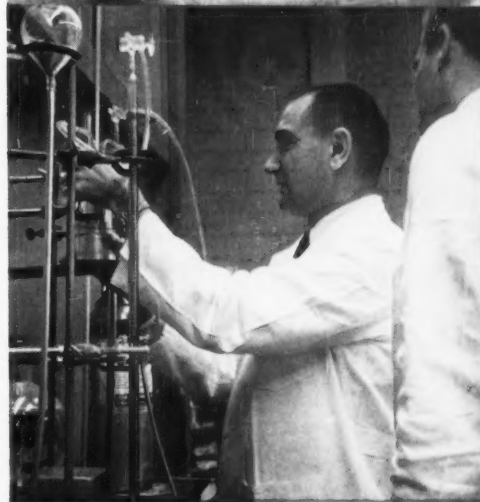
### *There are no easy answers*

Automobile engines will continue to demand higher performance from gasolines. Octane numbers will rise and sensitivity ratings will decrease. More gasoline will be produced, and more of it will be of premium grade. The refiners' answer to this challenge will be alkylate—lots of it.

Adding alkylation capacity involves some complex decisions, the weighing of a multitude of factors. Which process to invest in under a given set of conditions; what level of quality to aim for; how large a plant to build—these are difficult questions. To answer them requires a thorough understanding of all the processes, their economics and their practicability under various circumstances.

Nearly one-fourth of all the alkylation plants existing today were designed and built by Fluor. This fund of practical experience encompasses all processes under a great variety of circumstances. Fluor's broad knowledge of alkylation should be most helpful to you in planning a plant to fit your set of conditions.

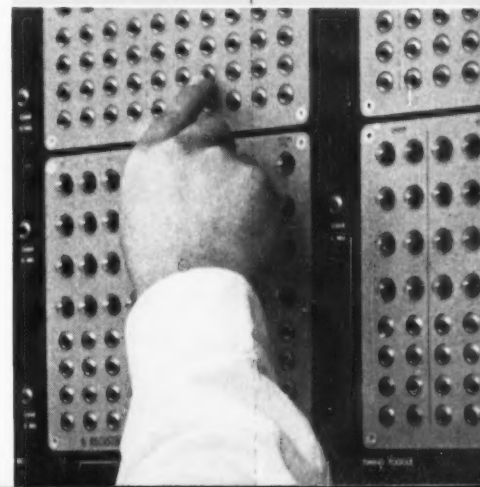
The Fluor brochure, "Alkylation Plants," is a brief guide to the various processes. Write to Dept. 12, The Fluor Corporation, Ltd., 2500 South Atlantic Boulevard, Los Angeles 22, California.



*When you consider expansion...  
the most important investment  
you can make is in the  
creative ability of men.*

# **FLUOR**

*Engineers and Constructors*

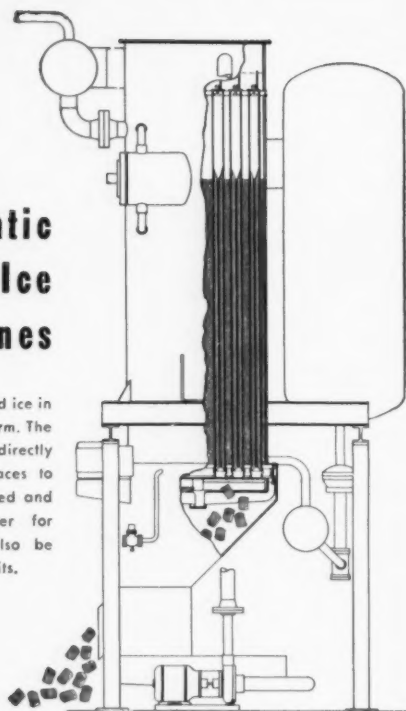




**GET AHEAD with . . . "YEARS-AHEAD" . . .**

## Automatic Tube-Ice Machines

Make clear, hard, sized ice in cylinder or crushed form. The refrigerant is applied directly to the freezing surfaces to produce ice with speed and economy. Cold water for process work can also be supplied by these units.



# Vogt

## ICE MAKING and REFRIGERATING EQUIPMENT

. . . for the preservation of foods and beverages during process and in storage. Petroleum refineries, chemical plants, and related industries also employ this equipment in various processes. In addition to equipment shown here, we manufacture liquid receivers, pipe coils, and valves, fittings, and flanges, for refrigeration as well as for high pressures and temperatures. Bulletins on request. Address Dept. 224A-RICW.

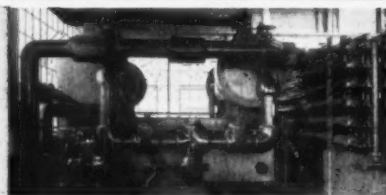
### Refrigeration Condensers

Available in horizontal multipass shell and tube types and vertical single pass types for Ammonia or other refrigerants. Special metals, lined tubes, etc. can be furnished for unusual operating conditions.



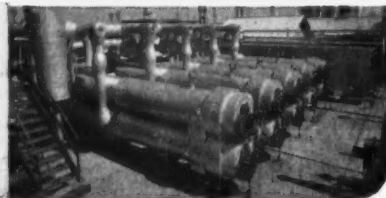
### Brine Coolers

Multipass type brine coolers are ideal for closed brine systems in cold storage plants, dairies, packing plants, petroleum refineries, etc. requiring units of large capacity. Also suitable for cooling non-corrosive liquids in general.



### Scraped Surface Exchangers

Continuously revolving scrapers sweep heat transfer surfaces clean and keep solids in suspension. Useful in problems of heat transfer with crystallization with high viscosity, or with solvent extraction. Available in double pipe and shell and pipe construction.



## HENRY VOGT MACHINE CO., Louisville, Ky.

SALES OFFICES: New York, Chicago, Cleveland, Dallas, Camden, N. J., St. Louis, Charleston, W. Va., Cincinnati

OTHER VOGT PRODUCTS

▶ DROP FORGED STEEL VALVES, FITTINGS AND FLANGES IN A COMPLETE RANGE OF SIZES • PETROLEUM REFINERY AND CHEMICAL PLANT EQUIPMENT • STEAM GENERATORS



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THE BUSINESS MAGAZINE OF THE CHEMICAL PROCESS INDUSTRIES

## BEHIND THE NEWS

CHEMICAL OUTPUT and prices—how do this year's figures stack up against last year's? Production volume is currently running about 5% above that of the comparable week a year ago;\* prices, about 2% higher, as measured by CHEMICAL WEEK's output and price indexes.

This week, these useful indexes appear in a new physical form. They are the highlights of a new expanded statistical section, "Business Benchmarks," that debuts on the last page of this issue. The new format, we think, makes the data even more useful, since it will be easier to compare the current week's statistics with those of the comparable week a year ago. And as more '59 figures appear, this advantage will increase.

The name of our new feature is significant. The business benchmarks for the chemical process industries are as diverse as the CPI's raw materials and the sales of CPI customers' products. Seeking meaningful data among so wide and diverse a group takes time—lots of it. And it's much too easy to become enmeshed in unimportant detail. Thus, the busy CPI executive—who needs up-to-date statistics on many fields—often is forced to concentrate on only the one or two that are his special concern.

Business Benchmarks henceforth will scan the broad picture, give readable, authoritative economic information to the management man who realizes that no industry stands alone.

We've stressed this interrelationship in our general reporting, as well as in stories on specific chemical-consuming industries. But now we're highlighting it each week.

Business Benchmarks this week features the first two of a series of charts that present an at-a-glance picture of 18 important CPI customers. In this issue: the steel and construction industries. Next week: textile and automobile production.

\*And 67% above the output index in CW's first issue, Jan. 20, '51.

*H. C. Johnson*  
Editor-in-Chief

# Rush Order?

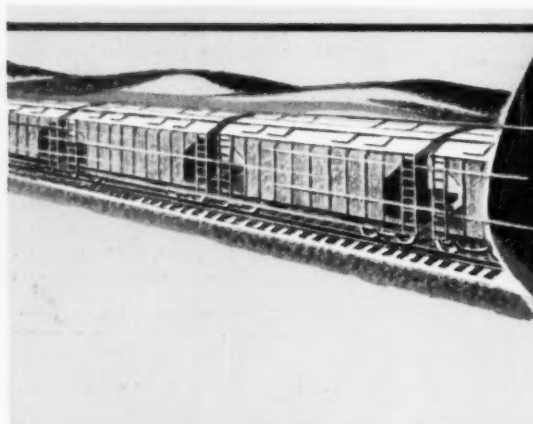
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PI-4-19

# OPINION

## MCA's Prime Movers

TO THE EDITOR: I have read with a great deal of interest your recent article on the Manufacturing Chemists' Assn. (*CW*, Dec. 20, '58, p. 68). I think you have done a real service to the industry in making the complex activities of MCA better understood.

As a relative newcomer to these activities, I was especially interested in the historical phases of your article. I knew that MCA had established a long-standing record for the industry, but was not too well acquainted with the details.

I felt, however, that more might have been said about the contributions of Maurice F. Crass, MCA secretary, to these activities over the past twenty-one years he has served the association. His grasp and perspective of MCA work has shown me many times that he has been in on many of these activities from the beginning and has justly earned the regard of many as "Mr. MCA."

I mention this not only because I think it will fill out your story but out of high regard that many of us feel for a long-time true friend of the chemical industry.

HARRY B. MCCLURE  
Chairman of the Board of Directors  
Manufacturing Chemists' Assn.  
New York, N.Y.

TO THE EDITOR: Your magazine presented a very good profile of the Manufacturing Chemists' Assn. (*CW*, Dec. 20, '58, p. 68). Your writer did a good job in delineating the character of the organization and how it has grown.

I am well aware that it is impossible to cover everything in a story of this type. However, one factor is essential to understanding the organization, its present status, and how it

reached that status. This factor is the work of two men—Warren Watson, former secretary-treasurer, and Maurice Crass, the present secretary-treasurer.

Many do not realize that most of the association's past accomplishments that you mention—including the truly heroic service to the country and the industry during this country's two recent wars—were successful because of the efforts and skill of these two men. During some of the most strenuous periods of MCA activity, these two men, with the help of three girls, carried the whole administrative load of MCA. Many of MCA's most successful programs, including a number now in operation, were originated by Warren or Maurice.

As good as your story of MCA is, I feel it needs this information to fill in the background and make it complete.

CLEVELAND LANE  
Assistant to the President  
Manufacturing Chemists' Assn.  
Washington, D.C.

TO THE EDITOR: A note to congratulate CHEMICAL WEEK for the comprehensive story on the activities of the Manufacturing Chemists' Assn. As the association's public relations director for several years, I feel you have done much to explain the contributions of the MCA to many chemical industry people who otherwise wouldn't have occasion to know precisely what it does do.

I'm sorry that lack of space must have precluded the detailing of much of MCA's history—especially the yeoman contributions of the association's secretary-treasurer, Maurice F. Crass.

GEORGE M. WORDEN  
Worden & Co.  
Washington, D.C.

*CW concurs in these estimates of "Mr. MCA." Emphasizing the present and the future, CW glossed lightly over the association's history — to which Maurice Crass has contributed — and still is—greatly.—Ed.*

TO THE EDITOR: May I express my appreciation for the article on MCA. Although I have worked closely in recent years with the organization and its able public relations staff, I was

grateful for your filling in some of the historical gaps in my knowledge.

I am also grateful for the thorough documentation of MCA activities and services that Bud Lane and his associates have been too modest to talk about in terms of the genuine achievements they constitute for the industry.

HARRY C. LEVIN  
Manager of Community Relations  
American Cyanamid Co.  
New York

## MEETINGS

**Compressed Gas Assn.**, 46th annual meeting, Waldorf-Astoria Hotel, New York, Jan. 19-20.

**Assn. of American Soap and Glycerine Producers**, 32nd annual convention; theme: soaps in stereo, '59; Waldorf-Astoria Hotel, New York, Jan. 20-22.

**American Society for Engineering Education**, Engineering Graphics Division, annual midwinter meeting, Wayne State University, Detroit, Jan. 21-23.

**American Management Assn.**, special conference on plastic packaging materials, Biltmore Hotel, New York, Jan. 21-23.

**National Assn. of Purchasing Agents**, Chemical Buyers' Group, midwinter conference, Congress Hotel, Chicago, Jan. 22.

**American Chemical Society**, Southeastern Texas Section, third biennial symposium on hydrocarbon chemistry, Shamrock Hilton Hotel, Houston, Jan. 22-23.

**Society of Plastics Engineers**, 15th annual technical conference, Commodore Hotel, New York, Jan. 27-30.

**American Society for Testing Materials**, committee week meeting, Penn-Sheraton Hotel, Pittsburgh, Feb. 2-6.

**National Assn. of Purchasing Agents**, Chemical Buyers Group, midwinter conference, Commodore Hotel, New York, Feb. 3.

**Paroneteral Drug Assn.**, dinner meeting, Statler Hotel, New York, Feb. 6.

**American Institute of Mining, Metallurgical and Petroleum Engineers**, annual meeting, San Francisco, Feb. 15-19.

**Chemical Market Research Assn.**, meeting; theme: chemicals for the textile industry; Dinkler Plaza Hotel, Atlanta, Feb. 18-19.

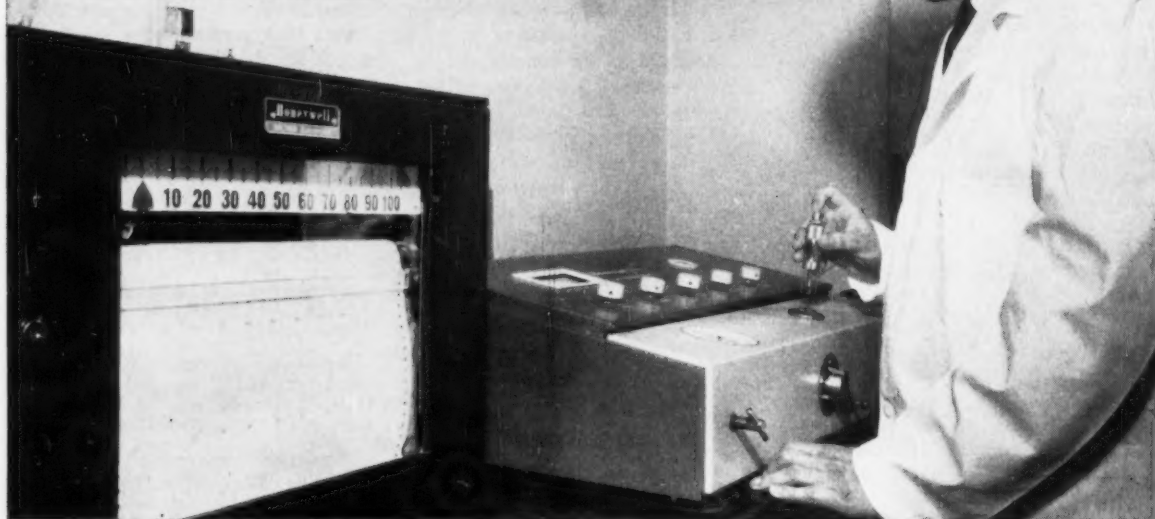
**Technical Assn. of the Pulp and Paper Industry**, 44th annual meeting, Commodore Hotel, New York, Feb. 23-26.

*CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.*

Address all correspondence to: H. C. E. Johnson, Chemical Week, 330 W. 42nd St., New York 36, N.Y.



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The gas chromatograph shown above is another reason why ADM can always supply fatty chemicals of uniform high quality. This remarkable instrument does an accurate analysis of a fatty acid, for example, in from a few minutes to an hour and a half. An analysis of the same accuracy by older methods would take weeks or months—if it could be done at all.

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# Business Newsletter

CHEMICAL WEEK  
January 17, 1959

**Bright sales prospects, but a continuing profit pinch** is the pattern emerging from the new harvest of company reports, as well as latest government statistics (*see also p. 24*).

U.S. Borax and Chemical reports sales inched up 4.1%, to \$53 million, during the fiscal year ending Sept. 30, '58. But net profits plunged 56%, to \$2.4 million. Result: the company skipped its December common stock dividend to save cash for boron research. Reasons for the sagging revenues were "difficulties" at the new Boron, Calif., plants (full startup was delayed from the mid-'57 target to this month); potash operations were crimped by a sag in domestic and export sales and a five-week shut-down; and depreciation charges rose.

Air Products, Inc. (Allentown, Pa.) attributes its 30% profit dip to a three-month strike. But sales curved up 17%. The figures (for the 12 months ending Sept. 30): net earnings, \$1.4 million; sales, \$40.6 million.

For different reasons, West Virginia Pulp and Paper reports a similar sales-earning pattern for its fiscal year, which ended Oct. 31. Sales were up 4%, to \$208.1 million; profits down 24%, to \$9.6 million. Behind the dip: "Weakness of the general economy," higher depreciation charges, higher construction and operating outlays. Sales were boosted by new converting operations acquired during the year. The company spent almost \$33.5 million in plant additions last year, plans a comparable outlay for this year. As part of a newly launched, \$50-million building program, two new paper machines will be added to double white-paper capacity by the mid-'60s.

## **But some concerns managed both sales, profit rises.**

For Knox Glass, the sales and profit picture was doubly bright. Earnings soared 53%, to \$1.2 million, during the year ending Sept. 30. Sales hit \$36.8 million, up 13%.

And Pfizer now predicts its sales will hit \$260 million by '60. Lending to the optimism: for the year just ended, controller E. H. Smith estimates sales at \$220 million, up 6% from '57.

For Dow, sales have rebounded to prerecession levels, and the latest quarter was "one of the best in history in terms of volume." Magnesium paced the pickup, followed by plastics. President Leland Doan picks both materials as top growth prospects. And he tabs building products as "one of Dow's brightest growth areas," with sales here on the way to hitting \$100 million/year in the early '60s pushed by growth in auto sales and home construction.

•  
**Advance word on two major plastics ventures** came last week from National Distillers President John Bierwirth.

## Business Newsletter

(Continued)

In the question-and-answer session following a talk to Los Angeles security analysts, Bierwirth revealed tentative plans for an automated polyolefin plant and another unit to manufacture polyethylene film for packaging.

Feature of the polyolefin plant would be convertibility of processes. By pushing a few buttons, said Bierwirth, the plant could switch from production of polyethylene to polypropylene or other polymers. Plans are indefinite; go-ahead will depend on market conditions.

•

**Will an operating base in England help Reynolds Metals become a bigger and more profitable producer of aluminum in the U.S.?**

This question—which became hotly pertinent late last week when Reynolds and Britain's Tube Investments Ltd. won the battle for joint control of British Aluminium Ltd.—will be taken up Feb. 2 at a special meeting of Reynolds' shareholders, in Richmond, Va. Probable purpose of the meeting: authorization of additional common and preferred stock, possibly for financing related to the British Aluminium venture.

By aggressive buying, Reynolds and Tube Investments reportedly have acquired 80% of outstanding British Aluminium shares. The British Treasury is expected to o.k. their plan to control the basic aluminum producer through a holding company owned 51% by Tube Investments and 49% by Reynolds. Thus, Alcoa's rival bid—\$37.8 million in cash for a 30% interest in British Aluminium—appears to have been scuttled.

•

**Latest on '59 growth rate for the forest products industries:**

- Rayonier's operating ratio—which had been only about 50% in the first nine months of '58—climbed to 60-62% in the fourth quarter and is expected to continue at that level in this first quarter. And first-quarter shipments will equal or exceed fourth-quarter tonnage.

- Oxford Paper Co. (Rumford, Me.) has awarded Rust Engineering Co. a contract for a major portion of a \$15-million kraft pulp mill.

- Provincial Paper Ltd. (Toronto)—subsidiary of Abitibi Power and Paper Co. Ltd.—will start a "general expansion" of manufacturing facilities.

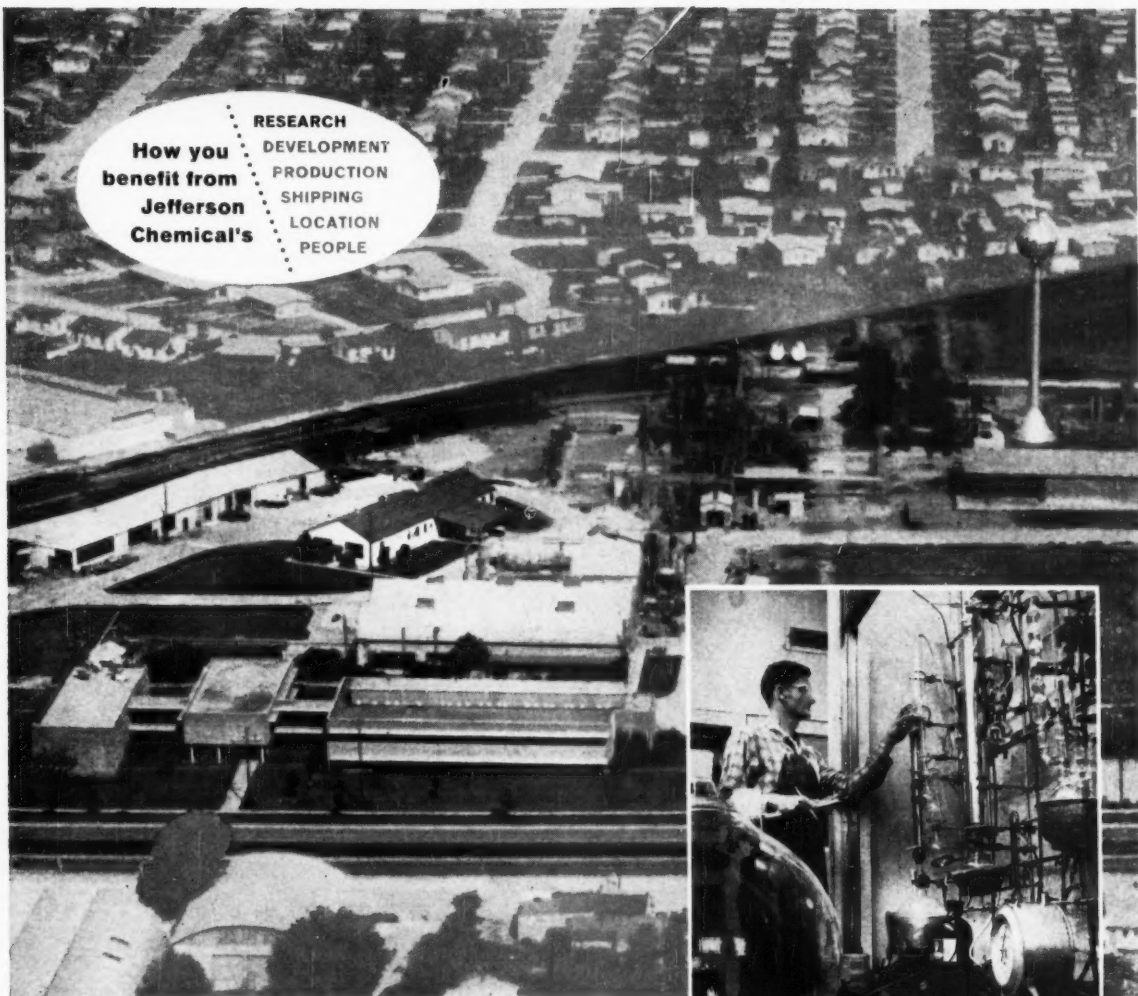
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**Allied Chemical is investing in Food Machinery's** South Charleston, W. Va. complex—a reverse twist from the supplier-customer financial cooperation seen in this week's Dow-Catalin deal (p. 23).

The Allied-FMC arrangement is called a "joint plan" to share expenses 50-50 for production of carbon tetrachloride and carbon bisulfide, and for expansion of these units. Allied will take much of the output; FMC's Westvaco Chlor-Alkali Division will still operate the plant.

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Here in pleasant functional surroundings, chemists and engineers are busily asking and answering *what* chemicals to make and *how* to make them better. Principal pursuits are Exploratory Research, Process Development and Application Research supported by analytical and physical chemical laboratories, library and machine shops. The lab-

oratory staff works hand-in-hand with the people who operate Jefferson Chemical's ever-expanding production facilities at Port Neches, Texas.

However, much of Jefferson's research is customer-oriented and closely coordinated with the Marketing Department. Your interests and most assuredly your personal visits are always welcome at Jefferson Chemical's Austin Research Laboratories.

  
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January 17, 1959 • Chemical Week

19

# Chemical Industry Construction Up 81% In Ohio During Last Three Years



DOW CHEMICAL COMPANY  
WILLIAM S. MERRILL CHEMICAL COMPANY  
GEBAUER CHEMICAL COMPANY  
AMERICAN ZINC OXIDE COMPANY  
AMERICAN AGRICULTURAL CHEMICAL COMPANY  
DuPONT DeNEMOURS & CO., INC.  
WOODHILL CHEMICAL COMPANY  
COLUMBIA-SOUTHERN CHEMICAL COMPANY  
DIAMOND ALKALI COMPANY

ALLIED CHEMICAL & DYE CORPORATION  
REESE CHEMICAL COMPANY  
HARSHAW CHEMICAL COMPANY

*If you live on water...you'll thrive in Ohio!*

**In 1956 Ohio** ranked third in the nation with \$153 million in chemical plants under construction.

**Today, the chemical industry** has announced additional investments of \$124 million — an increase of 81% in less than 3 years!

**Much of this phenomenal growth** has occurred in the Ohio River Valley, its tributaries and along the southern shore of Lake Erie.

**Here is a free** full flow of raw water amounting to more than a billion gallons a day — with additional billions close to the surface underground.

**Here is quick,** low-cost access to coal, oil and natural gas fuels.

**Here is a network** of close-at-hand transportation facilities — barge, rail, highway, air.

**Here is a highly skilled** labor pool, largely Ohio-trained in the nation's most extensive school system.

**Here is a center** of chemical research with laboratories and development facilities throughout the state staffed by trained researchers.

**Here are shoreline** industrial tracts from 100 to 1000 acres which may be purchased outright or on installments leased for a long term, or leased with option to buy.

**Here is the healthiest** of business climates in a state which employs its taxes and interprets its laws to promote profits rather than penalize them.

**For detailed information** on available industrial sites or any aspect of plant location in Ohio, write or phone Division of Economic Development & Publicity, Ohio Dept. of Commerce, Columbus 15, Ohio.

*If you're looking to the future . . . locate in*





JANUARY 17, 1959

# Chemical Week



SKETCHES BY R. KLUGA

As antibiotics case begins, Examiner Piper (center) rules on exhibit offered by FTC's Gercke (standing).

## As Antibiotics Makers Answer Antitrusters

With attorneys for five pharmaceutical companies vigorously resisting at every step, a six-man team of Federal Trade Commission lawyers last week launched the "trial" phase of what may well be a three-year legal hassle: FTC's antibiotics patent and pricing case.

The arena for this encounter is the circular, windowless Byrne Room, on the sixth floor of the New York Bar Assn. building in midtown Manhattan. Similar three-week sessions will again be held in this chamber in March and June. Other skirmishes are likely to occur in various federal courts and offices in New York and Washington as this complex action — in which considerable prestige is at stake, both for the antibiotics industry and for FTC — plods toward its now-unpredictable outcome.

Right now, it's FTC's inning. The commission's "counsel in support of

the complaint" is putting into the record numerous documents on which it bases its charges that five companies cornered the tetracycline market. The government's legal battery is headed by Andrew Goodhope, a top-ranking antimonopoly lawyer in FTC's Bureau of Litigation.

Company attorneys are trying, first, to keep the documents from being admitted as evidence and, second, to get limitations on the uses to which the documents can be put in later stages of the case.

**Companies Deny All:** In their written replies to the FTC complaint and in their opening statements before Hearing Examiner Robert Piper, company attorneys have broadly denied the agency's whole sweeping accusation. On top of this, they are challenging FTC's authority to attack the validity of a patent issued by a separate arm of the government.

Replying to this challenge, FTC counsel Joseph Gercke said his agency is not undertaking to police the Patent Office. But, he continued, FTC claims the same kind of authority that has been extended to the Justice Dept. "to puncture an invalid patent being used in restraint of trade."

Piper ruled last week that the companies may have independent accountants ascertain direct and indirect costs for their tetracycline products — but that if the FTC lawyers deem such data insufficient the government will be free to renew its original request: that the five firms be ordered to furnish all available data on production and distribution costs of the tetracycline products.

**Pricing Motive:** But company lawyers also got some help from Hearing Examiner Piper. He sided with company attorneys in several demands that the FTC lawyers be more ex-

plicit. Piper reportedly was assigned to this case because it is expected to drag past the retirement date of veteran examiner Frank Hier, originally assigned to hear it.

Piper, for example, backed a request by New York attorney Walter Mansfield — representing American Cyanamid's Lederle Laboratories Division — for an indication of how the FTC planned to use a certain Patent Office document. Gercke was reluctant to go into questions of motive at that stage, but he said the document showed that Cyanamid was permitting Pfizer to get its tetracycline patent to keep the antibiotics business from being ruined by "irresponsible price-cutting."

And Piper went along when Upjohn counsel Gerhard Gesell — Washington attorney who represented Du Pont in several major antitrust cases — insisted on knowing whether FTC was asserting that Upjohn was in on the alleged conspiracy prior to the issuance of that patent. Gercke at first said he would not "interpolate" on the wording of the FTC complaint, but finally stated that he did not intend to introduce any evidence connecting Upjohn and Olin Mathieson's Squibb division with the alleged conspiracy before Pfizer received that patent.

**Latecomers Culpable:** However, Gercke stoutly maintained that this was not an important distinction for

those two respondent companies. "A conspirator who enters a conspiracy at the 11th hour," Gercke declared, "is just as much involved as one who enters at the first or second."

According to FTC's account, this is how the five respondent companies came to "dominate" the tetracycline market: Back in '49, Cyanamid got a patent on chlortetracycline (2,482,055), and the next year, Pfizer got a patent on oxytetracycline (2,516,080). Then in '54, Cyanamid licensed Pfizer to make chlortetracycline for the purpose of extracting tetracycline; and in return — says FTC — Pfizer agreed that whenever it got a patent on tetracycline, it would grant a license to Cyanamid.

Next, FTC charges, Cyanamid and Bristol-Myers' Bristol Laboratories Division stood aside and allowed Pfizer to receive its '55 patent on tetracycline (2,699,054). FTC holds that Cyanamid in particular should have pointed out to the Patent Office examiner that tetracycline is "coproduced" — and in "appreciable amounts" — in the production of chlortetracycline.

Withholding that information, Gercke avers, was instrumental in Pfizer's getting the patent. (Mansfield said Cyanamid had reported that tetracycline is coproduced under certain conditions, and that a patent examiner — in a '54 decision — "was well aware of this.")

**Closing the Ring:** Upon receiving

that patent, Pfizer — "under prior arrangements," according to FTC's version — issued a license to Cyanamid to produce and sell tetracycline. Then Cyanamid gave Bristol a license to produce and sell chlortetracycline as a component in mixed formulations; and Bristol granted Cyanamid rights to produce and sell tetracycline under any tetracycline patents that might come to Bristol as the result of applications then on file in the Patent Office.

Meanwhile, Pfizer was locked in litigation with Bristol, Upjohn and Squibb, which were selling tetracycline produced by Bristol. This ended with Pfizer licensing Bristol to make and sell the product, and licensing Squibb and Upjohn to sell it.

Gercke caps this account by asserting that Squibb and Upjohn, as well as Cyanamid and Bristol, knew — before they accepted licenses from Pfizer — that the Patent Office had been "misled" and that tetracycline really was not patentable. "He who takes a license under a patent he knows to be invalid," Gercke said, "is in restraint of trade."

The net effects, FTC sums up, are the lessening of competition in the sale of antibiotics and "a dangerous tendency to create a monopoly." The burden of proof will be on the FTC lawyers — and last week's opening sessions made it clear that the burden will be a formidable one.

## Legal Lineup: Government Lawyers vs. Veteran Industry Defender



**PRESSING GOVERNMENT'S CHARGE** of monopoly against antibiotics producers are FTC lawyers (*l. to r.*) Gercke, Hanscom, Goodhope. Gercke opened case.



**IN INDUSTRY'S CORNER** is veteran antitrust counsel Gesell (*far right*), representing Upjohn. Gesell, who parried opening thrusts, helped Du Pont win cellophane case.

## Monsanto-Kellogg in Court

### MONSANTO CHARGES

*Kellogg failed to design and commission plant as per agreement. Resulting damages total \$9.5 million.*

### KELLOGG COUNTERS

*We're not liable for "consequential" damages. Contract calls for arbitration; suits seek to break contract.*

## Methanol Plant in Middle

A major court battle over construction of a chemical plant is shaping up this week. Monsanto and Heyden Newport charge M. W. Kellogg Co. with fraud and misrepresentation in building a methanol unit in Texas City, Tex. Kellogg, fighting back, has filed a countersuit demanding arbitration of the dispute and accusing Monsanto and Heyden Newport of trying to get out of contract terms through a technicality.

The legal tangle started more than five years ago when Monsanto and Heyden awarded to Kellogg a contract for construction of the plant. Inserted in the contract—after considerable discussion, according to Kellogg—was a phrase guaranteeing that Kellogg had the know-how to build such a plant. Monsanto and Heyden claim that Kellogg's guarantee was unfounded.

**Knowledge from Abroad:** Kellogg, in its brief filed in a New York court, says it obtained pertinent know-how from Imperial Chemical Industries (London) and Germany's Linde Gesellschaft. Moreover, it says it notified Monsanto and Heyden, months before the final contract was drawn up, that it was consulting these firms.

The plant was to be completed by Nov. '54. But its operation was delayed for two and one-half years by failure of certain equipment to work properly, Monsanto says.

Kellogg contends the delays were caused, in large part, by failure of Monsanto to supply the proper amounts and types of gases to be processed by the plant.

**\$9.5 Million Asked:** In one complaint, filed in the superior court of Delaware, Monsanto and Heyden list 33 different types of equipment failure that, they charge, were caused by Kellogg's "gross negligence." Monsanto and Heyden further assert that these failures caused a total of \$9.5

million in damages to both companies.

Replying to the charges, Kellogg President Warren Smith termed them "preposterous." Charging Kellogg with fraud is a technical device to get around contract provisions calling for arbitration of disputes—provisions that Monsanto and Heyden insisted be included, he said.

Smith adds: "The contract says definitely that we are not responsible for the kind of damages that Monsanto and Heyden now want to collect from us, sums that exceed the entire cost of the plant."

**Attitudes Stiffen:** "We are going to do everything possible," Smith declared, "to see that the other parties to this contract observe both its letter and spirit, as we do."

A Monsanto spokesman refused comment on Smith's statement, adding: "The language of the complaint filed by us . . . reflects our attitude and our sincere belief."

Monsanto and Heyden Newport are particularly critical of the plant's low-temperature rectification unit for processing acetylene. They say it contains a serious explosion hazard, cannot meet capacity and yield requirements, and might leak dangerous materials into the refrigerant system.

Kellogg is asking the New York state supreme court to order Monsanto to proceed with arbitration of the claims—as, Kellogg says, is outlined in the original contract.

A second complaint filed by Monsanto and Heyden Newport, asking an immediate restraining order against Kellogg's suit, was turned down late last week by Vice-Chancellor William Marvel in the Delaware court of chancery. Marvel explained that damage "will probably not result" from the refusal. He set Jan. 22, however, as the time for Kellogg to show cause why an injunction against its New York action should not be issued.

## Catalin Gets a Lift

"This is our year to grow," says Catalin Corp. President Harry Krehbiel. And the financial wherewithal, he told CW last week, will be supplied by Dow Chemical, which for more than 20 years has been one of Catalin's major suppliers of polymers and chemical intermediates.

More specifically, Dow is investing \$2.3 million in Catalin's new—and still not quite definite—expansion program. This money is being advanced as a 30-year subordinated investment with these features:

- Dow can convert all or any part of the unpaid principal into new shares of Catalin common stock at any time within the 30 years. Conversion price: \$8.50/share. If this privilege were exercised right away, Dow would hold a nearly 22% equity interest in Catalin.

- Catalin does not have to make any payments on the loan during the first 10 years.

- Payments on the loan are to be made only out of profits.

**Retiring Preferred Shares:** With capital resources bolstered by the money from Midland, Catalin plans to call all 40,633 shares of its preferred stock—callable at \$21/share. This would require an outlay of somewhat more than \$850,000—unless holders of preferred elect to convert to common stock at \$8/share. This appeared unlikely late last week.



Catalin's Krehbiel: More manufacturing can broaden profit margins.



with Catalin common selling at little more than \$7 on the American Stock Exchange; but the price conceivably could rise following this week's announcement of the new financing.

But more important is what the Dow loan will enable Catalin to do in the way of plant expansion and alteration. In all recent years, resale of styrene and other purchased products has accounted for more than 50% of Catalin's total sales; and Krehbiel repeatedly has pointed out to his stockholders that the profit margin on resale materials is quite narrow. Increasing the company's manufacturing operations, Krehbiel believes, will lead to higher rates of return.

**Special Chemicals, Acrylics:** Right now, Krehbiel says he and his board haven't decided on specific plant projects. But he emphasizes that Catalin is currently most keenly interested in two product groups: new chemical intermediates and specialties, handled by the Chemical Division; and acrylic resins, under the Thermoplastic Division.

And future growth plans are sure to involve Catalin's polystyrene plant at Calumet City, Ill., which is under lease to Dow until '60. This plant is not in operation, and Krehbiel says it's unlikely that Catalin will try to go into polystyrene production—other producers are too far along. But he says the Calumet City plant can be readily adapted for various other operations.

Interest rate was not disclosed, but in any event the investment looks like a good one for Dow. Catalin is a big buyer of Dow products now, and expansion is likely to make Catalin a bigger Dow customer later.

Borrowing from Dow will not stand in the way of any good merger opportunity that might come along, Krehbiel told *CW*. More particularly, Dow's investment would not be a barrier to resumption of merger discussions with Reichhold Chemicals—talks that three or four years ago seemed sure to lead to unification but which eventually utterly collapsed (*CW Business Newsletter*, Nov. 26, '55). Krehbiel says he doesn't expect anything to happen along this line in the immediate future, but that most of the basic advantages that would have accrued to Reichhold and Catalin then "are still there."

## CPI SALES SURGE, EARNINGS DRAG

	Change in Sales		Change in Earnings	
	Third-quarter '57 vs. third-quarter '58	First nine months '57 vs. first nine months '58	Third-quarter '57 vs. third-quarter '58	First nine months '57 vs. same span '58
Industrial chemicals	-1.9%	-7.8%	-16.5%	-27.4%
Pharmaceuticals	+3.9%	+7.2%	-2.1%	+5.4%
Chemicals and allied products, total	+3.0%	-2.0%	-4.5%	-15.3%
Paper and allied products	+0.9%	-4.0%	-11.7%	-19.7%
Products of petroleum and coal	-0.7%	-6.6%	+0.8%	-20.7%
Rubber and products	-1.1%	-4.5%	+10.4%	-18.0%
Stone, clay and glass products	-0.6%	-6.6%	+13.1%	-15.2%
Primary nonferrous metals	-3.1%	-13.1%	-28.0%	-45.0%
All manufacturing, total	-3.7%	-7.2%	-11.3%	-27.6%

Sources: Federal Trade Commission, Securities & Exchange Commission.

## Bounding Back to '57 Peaks

**More solid evidence that chemical process companies are straightening out of their recession spins—though at widely varying rates—appeared last week in the government's latest quarterly financial report for manufacturing corporations. It covers business transacted through the third quarter of '58.**

For producers of chemicals and allied products, a '58 sales total of \$23.2 billion now seems assured, as predicted by the government and *CW* (*CW*, Dec. 27, '58, p. 37). This will have been achieved if fourth-quarter sales equaled the record \$6-billion level reached in the third quarter. Profits, too, are regaining altitude, but more slowly, and in a more jagged pattern.

**Drugs Did Best:** As usual, pharmaceuticals lead the sales gain within the chemicals and allied products sector. But in contrast with the general trend, drug companies' third-quarter gains indicate a slowing down in rate of growth. In '57, third-quarter sales were 16% higher than second-quarter

volume; in '58, the second-to-third-quarter rise was 10.8%.

Pharmaceutical profits also deviate from the all-CPI and all-industry trends. In the first and second quarters of '58, drug earnings were higher than their corresponding '57 levels; but '58's third-quarter net was 2% lower than '57's.

**Pulp, Paper Comeback:** The only other CPI group to bring third-quarter sales above the '57 level were producers of paper and allied products. But their third-quarter sales rise of 0.9% failed to drag nine-month sales up to the '57 level. And profits, though improving, were still 11.7% below those in third-quarter '57.

Healthiest gains in earnings were scored by producers of rubber, stone, clay and glass, and petroleum and coal products. They were the only sectors in the CPI to bring third-quarter earnings above '57 levels.

On most counts, the CPI segments scored well above the all-manufacturing performance. Primary nonferrous metals are an exception.



## For Safer Labeling

A new "model bill" to govern labeling of hazardous household chemicals is being circulated to federal and state lawmakers this week. It is the joint project of Manufacturing Chemists' Assn., Chemical Specialties Manufacturers Assn., National Paint, Varnish & Lacquer Assn., and American Petroleum Institute.

Last week, it appeared that this new bill, a modified version of a proposal drafted by MCA last year, may stand a chance in legislative hearings this year. Officials of American Medical Assn., which backed a rival bill last year (*CW*, Aug. 2, '58, p. 23), say they're "encouraged" by the new draft.



## Sign of the Weather

One incident in CPI operations during last week's cold snap: crew members chipping ice off slippery superstructure of *S.S. Chemical Transport* at New Haven, Conn.

Entire Eastern third of the U.S. bore the brunt of the cold, which slowed barge traffic, clogged processing line valves, cut outdoor work to a minimum at various plants from Maine to Texas.

Outlook for the rest of January: below-normal temperatures in East, above-average snowfall for mid-Atlantic and Southern states.

## EXPANSION

**Chemicals:** Eastman Kodak has earmarked \$61 million for capital improvements in '59. Included in the program is \$33 million to be spent at the Rochester works, where Kodak makes photographic and fine chemicals, vitamins and equipment. About \$24 million will be paid out for the Tennessee Eastman and Texas Eastman chemical divisions. Last year, Kodak spent about 90% of its preliminary \$62-million capital improvements budget.

**Building Materials:** Vulcan Materials Co. (Birmingham, Ala.) plans to spend some \$10 million for new plants and equipment this year. The company is reported to be interested in acquiring firms in the West. Its Western operations already include plants in Kansas, Texas and New Mexico. Sales last year: about \$100 million.

**Petrochemicals:** Standard Oil of California will add a polymerization unit to its 55,000-bbls./day catalytic cracking plant, now abuilding at Richmond, Calif. It will bring investment at the plant to \$30 million.

**Paper:** The North Carolina Pulp Co. (Plymouth)—subsidiary of Weyerhaeuser Timber Co. (Tacoma, Wash.)—has purchased 120,000 acres of timberland and a mill from Bate Lumber Co., reportedly for \$15 million.

## COMPANIES

**Olin Mathieson** has sold its majority interest in Hunter Engineering Co. (Riverside, Calif.), producer of aluminum sheet, strip and extrusions, because it duplicates the activities of OM's Ormet operation. Joseph Hunter becomes sole owner of the Riverside company. The two companies will continue to cooperate on research, and OM retains rights to a continuous casting process developed in joint ownership.

In another part of its spin-off operation, OM is negotiating for disposal of its 43% interest in F. H. McGraw Construction Co. Tentative plan: McGraw to buy back the stock.

**Du Pont** has set up a Ceramics Division within its Electrochemicals Dept. to "provide a greater concentration of effort" on its line of products for the ceramics and glass industries. The unit draws together sales, production and research activities. Until now a ceramics products section had operated within the electrochemicals sales department.

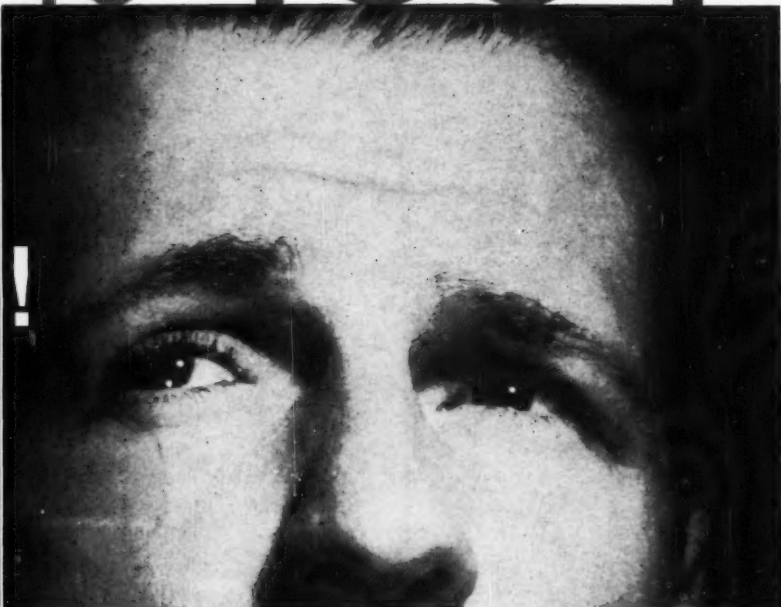
**Mississippi Chemical Corp.** (Yazoo, Miss.), a fertilizer-producing cooperative, has filed for registration of 200,000 shares of common stock (to be sold at \$8.75/share) and 8,000 shares of special common stock (\$131.25/share). The offering is to be made primarily to farmers and farm groups, then to others interested in buying nitrogen fertilizers. Together with a \$1-million bank loan, proceeds from the stock sale will go toward a new urea plant, additional anhydrous ammonia facilities for Mississippi's subsidiary, Coastal Chemical, and other construction. The special common stock issue will be utilized chiefly in an exchange of shares to help maintain the company's status as cooperative.

**Name Changes:** Union Carbide's Electro Metallurgical Co. to Union Carbide Metals Co. . . . Sinclair Chemicals to Sinclair Petrochemicals . . . Commonwealth Color & Chemical to Comcolloid, Inc. . . . Loven Chemical to Alcyllite Plastics and Chemical Corp.

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# WAX

WAX	TYPICAL MELTING POINT IN DEGREES F	DESCRIPTION
267 Wax	267	Tan, opaque, moderately brittle, and does not warp or shrink upon cooling.
272 Wax	272	Yellow-tan, waxy, and does not warp or shrink upon cooling.
315 Wax	315	Tan, opaque and waxy.
325 Wax	325	Tan and waxy.
335 Wax	335	Tan, opaque, waxy, and does not shrink upon cooling.
350-A Wax	350*	Yellow-tan, translucent, brittle, and somewhat plastic.
350 Wax	350*	Dark tan, opaque, and very brittle.
400 Wax	400*	Beige-tan, opaque, and very brittle.

\*Solidification Points

Carlisle Research has developed a new series of synthetic waxes with melting points starting at 267°F. and ranging up to 400°F. Combined with the high melting points are other unique physical and chemical properties.

Properties suggest numerous applications where the waxes might be used to great advantage, such as in electrical potting and dipping waxes, asphaltic compounds, tars, insulating materials, metal-drawing compounds, and chemical-protective coatings. Descriptions of waxes given at left may suggest many other applications among your formulations where one or more of the new waxes could assist you.

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# Washington Newsletter

CHEMICAL WEEK  
January 17, 1959

**Don't look for much legislation from the new Congress**, now getting under way. Reason: both Democrats and Republicans are trying to determine the precise formula for success in 1960, the real political payoff year.

Underlying both Eisenhower's proposals and the reactions of the Democrats is confidence in the business outlook. No significant faction in either party figures that there will be a business decline between now and the Presidential election in the fall of 1960.

**Eisenhower is trying to make this the issue for the next two years:** a balanced budget, a sound dollar, and a fight against inflation. This commits him to a hard fight, across the board, against proposals to boost spending on government programs—in defense and in almost all welfare programs.

He's talking of carrying this fight to the voters. He says his new "Cabinet group on price stability for economic growth" will strive to build a "better public understanding" of the "conditions necessary for maintaining growth and price stability."

But neither the Democrats nor the Liberal wing of the GOP feel that this is enough. Each of these groups wants to show more "leadership"; "more sense of urgency"; "more imagination"—but at the same time they want to avoid being tagged as big spenders who are unconcerned about inflation. This may be difficult to do.

**Eisenhower plans to meet criticism of lack of leadership**, in one area, by naming a new nonpolitical group of leading citizens from all walks of life to determine what the public needs will be five and 10 years hence, and what government programs will be necessary to meet them. This would be a report on all the needs of society, comparable to such studies already done in limited areas—e.g., highway construction, schools, water resources.

The Democrats are leaping into such activities themselves with a will. Senator Sparkman's (D., Ala.) big investigation of housing needs for the next 10 years, already getting under way, is one example; this survey of a major government-subsidized area has been planned for months.

Eisenhower notes that higher spending is being planned for certain programs—more for science and education, development of water resources, urban renewal programs and highways. But in general his budget plans reveal a cautious approach to any big new increases.

Tax legislation is a "must." For instance, corporate rate increases stemming from the Korean War—the 52% rate—won't be allowed to drop back to 47%. Eisenhower says tax revision prospects will be "brightened if expenditures do not exceed the levels recommended."

## Washington

### Newsletter

(Continued)

Democrats talk mostly of "closing loopholes"—by which they mean taking a close look at business income now benefiting from the capital gains rate, depletion allowances, co-op tax benefits, and the like. One big tax fight will be over increasing the federal gasoline tax to help pay for highway construction.

**Nothing much new in labor legislation is likely.** Eisenhower wants legislation on two points—blackmail picketing and secondary boycotts—stricter than the Kennedy-Ives bill provisions, which Congress failed to pass last year.

There are no new clues this early on the outlook for legislation of specific interest to the chemical industry. One general rule is this: congressmen can tell themselves, "If we don't pass it in 1960, we can do it in 1961." Much depends on the political benefits of passage this year.

Legislation regulating color additives is a good example. Chances favor eventual approval of such a law in the wake of approval for the first time of food additive regulation in '58.

Extension of the federal Air Pollution Act is a certainty this year. The furor around the country keeps the issue alive.

Final approval of legislation regulating labeling of hazardous chemicals isn't likely soon, despite the fact that four industry groups are presenting a solid front for the first time (*see page 25*). Medical groups—powerful in Congress—disagree on important details.

New antimerger legislation—such as a requirement that government be notified well ahead of a merger—isn't likely to go anywhere. (But new antimerger suits are sure.)

•  
**Oil and minerals producers will get a tax break** on depletion. Internal Revenue tax authorities say they will not challenge recent rulings by the U. S. Tax Court, holding that charitable contributions by an owner or operator need not be deducted from gross income in computing the 50% maximum limit on percentage depletion.

In one case involving a CPI firm the Tax Court ruled that U. S. Potash Co. did not have to deduct over \$100,000 in charitable contributions in determining its net income for purposes of figuring its percentage depletion on operations of a potash mine and refinery near Carlsbad, N. M.

The court's ruling restored the company's claimed depletion allowance for '52 to \$2,067,157. Internal Revenue—arguing the contributions had to be deducted in computing depletion—had sought to reduce the claimed allowance by almost \$33,000.

By giving in to the court, tax officials will no longer treat charitable contributions as overhead or other expenses that serve to reduce the percentage depletion permitted by the 50% limitation.





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*Putting Ideas to Work*

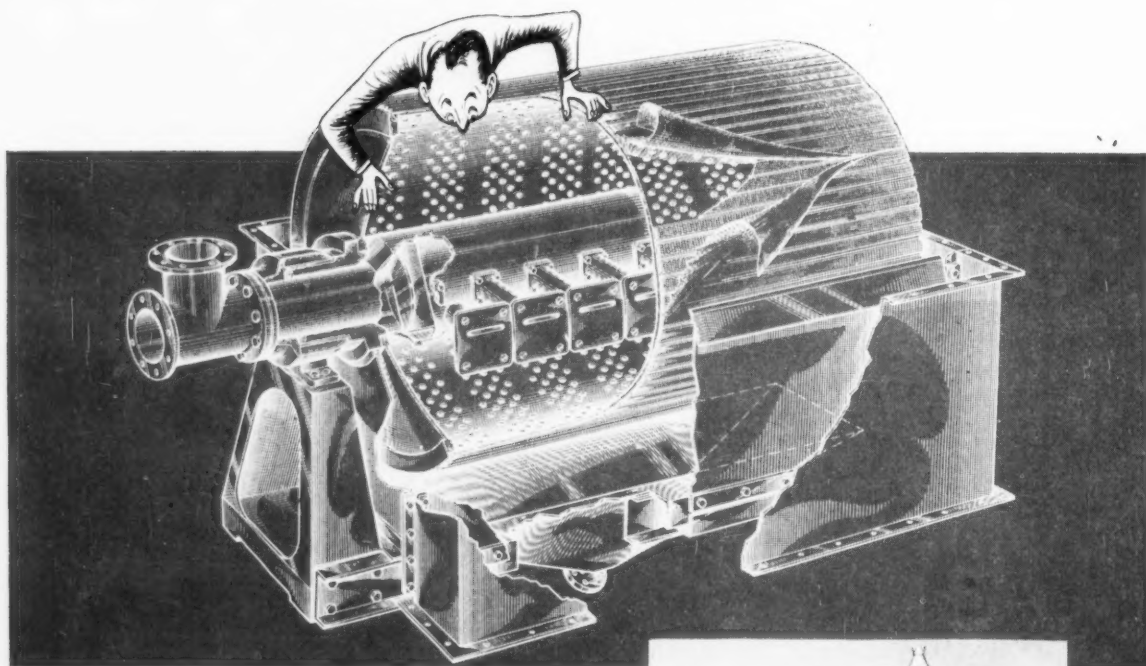
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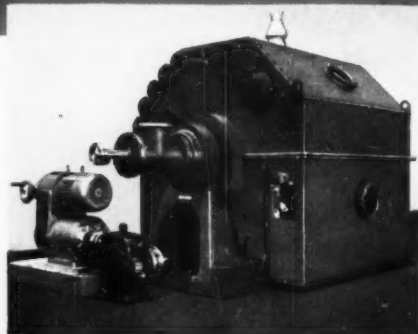
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# ADMINISTRATION

## In Expansion, New Opportunity for Hiking Income

**Four accounting  
gambits to raise  
current income  
in the face  
of growing  
construction outlays**



The \$3-billion capital outlay that is planned by the chemical process industries\* for the next few months brings a major challenge: how to conserve income while building. In this area, chemical companies might do well to take a leaf from capitalization and accounting practices used in other industries, particularly the utility field.

Four systems are of primary interest in this regard:

\*McGraw-Hill Dept. of Economics (CW, Dec. 27, '58, p. 46).

- Capitalization of interest during construction.

- Capitalization of taxes during construction.

- Capitalization of officers' salaries during construction.

- Getting the most out of depreciation accounting.

All are keyed to rate of expansion. Enterprises expanding most rapidly will tend to get the greatest benefit, depending also, of course, on the size of the operation.

Although these systems have reached

a state of high refinement in the utility field, Willard Stanley, financial counselor and retired vice-president, finance, of Southwestern Public Service Co., says their broad principles are equally valid in other industries. He has been sounding them out, himself, for five years among financial men in numerous fields, reports that even though they're merely logical extensions of present practices, few companies have realized their potential. His studies of accounting practices and income tax laws indicate

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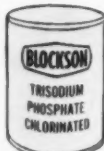


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100 lb. Bag

## ADMINISTRATION

that although utility administrative practices are reviewed by the Federal Power Commission, the systems themselves may be used elsewhere.

### Gambit 1

**CAPITALIZE INTEREST.** Interest on money invested in construction should be charged to cost of project. Credit to current income.

**Interest Capitalization:** Firms installing new plants or equipment must, of course, pay the cost of money invested during the construction period. Consequently, Stanley urges, such cost should be counted as a cost of the project itself rather than as an operating expense. This is as true of equity money, depreciation cash, retained earnings and other internal funds as it is of borrowed money.

Stanley recommends that management specify such cost relative to the money invested and that it represent a fair approximation of the weighted average over-all cost of funds invested; this amount should be applied consistently in calculating the amount to be capitalized.

As an example, Stanley cites a company that had \$10,000 invested in a \$100,000 project at the beginning of a month and \$20,000 by month's end. Calculated cost of the money during that month was \$75, or 0.5% (figured as one-twelfth of 6%/year on the \$15,000 average investment). This amount was credited to income as a charge for interest after first calculating operating profits; thus, income and project cost were both increased by a like amount. If the monthly investment had continued, in ten months the average total project investment would have been \$95,000 with total income credits of \$2,500.

The amounts of income increase vary, of course, with the size of a company's operation, its rate of expansion, interest rate chosen, duration of the construction projects and amounts invested during construction months. Obviously, if the construction period is short, or the amounts involved are small, the monthly cred-

its are insignificant. But, where applicable, the system has the advantage of deferring, for a considerable period, the payment of income taxes on the amount capitalized.

Stanley agrees that the increased book values stemming from the extra capitalization would reduce income in subsequent years. He points out, however, that in most cases it should be many years before the aggregate of such reductions would approach the increase in a current year's nontaxable income. Also, he adds, the added book value may well be a potent argument in defending a company against charges of excessive rates of return on investment.

### Gambit 2

**CAPITALIZE TAXES.** Segregate state and local taxes on projects in construction and charge to cost of construction. Credit to current income.

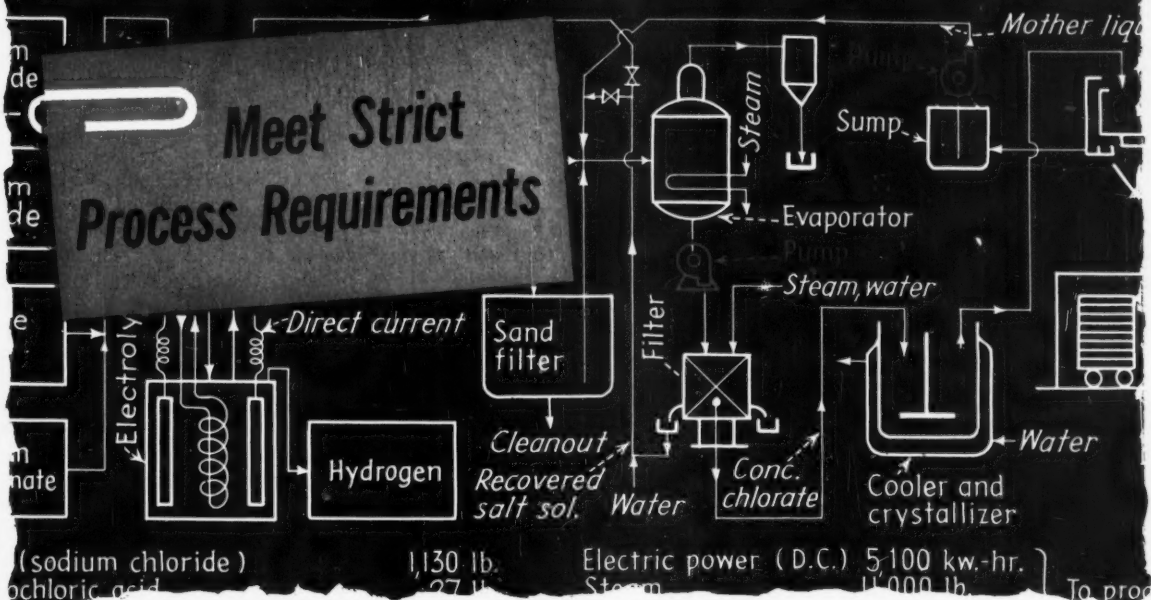
**Capitalization of Taxes:** Where companies are statutorily allowed to, they may benefit by segregating and capitalizing taxes on property under construction. But before attempting to do this, Stanley suggests, two important questions must be answered: whether state and local governments provide for taxation of facilities before their completion and whether projects under construction constitute the kind of property subject to such taxation. Usually, these taxes are ad valorem and are customarily limited to real estate.

Stanley reports that there is ample legal ground for capitalizing taxes, even if tax bills don't specifically mention such property nor segregate the amounts. He recommends figuring taxes on the annual assessment date and on the amount of construction accomplished at that time. If no statutory provision has been made for segregating taxes, he suggests they be set pro-rata to the total of all taxable property.

One drawback concerns the date of assessment relative to the status of construction work. If it is near the beginning of the project, the amount of capitalizable taxes will be reduced



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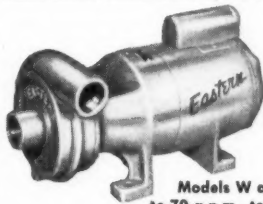
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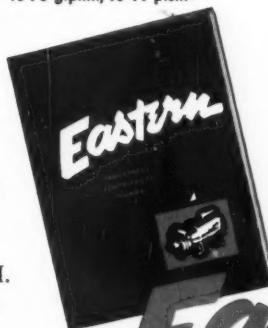


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## ADMINISTRATION

and may render the policy useless. He points out that the same arguments with respect to hiking the book value of the property apply here, as they did to capitalizing interest.

### *Gambit 3*

**CAPITALIZE SALARIES.** Charge part-time salaries of officers and other operating personnel to cost of project. Credit to current income.

**Salary Capitalization:** Time spent by officers and key supervisory employees on the construction of new facilities should be counted as a portion of the cost of the facilities, not as operating expenses, Stanley believes. Similarly, allocations would apply reasonably to time spent by clerical and other operating employees. He suggests that such expenses be capitalized, if the paper work required to calculate them does not outweigh the income credits—often the case with lower-echelon personnel.

Again, court decisions indicate that officers' salaries are deductible in full for tax purposes, even though a portion of them may be capitalized on the books. This assumes, of course, that their services would have been necessary to the company even if it were not engaged in any construction work.

No similar decision has been rendered with respect to supervisors' wages or wages of clerical and other employees. However, a check with tax accountants indicates that such wages should be fully deductible if such employees devoted 75% or more of their time annually to company operations.

### *Gambit 4*

**SWITCH DEPRECIATION.** Use straight-line depreciation for book purposes, rapid depreciation for tax purposes. Set up reserve for deferred taxes to conserve later income.

**Depreciation Accounting:** Stanley believes that many chemical industry managers are fully aware of the possibilities of using rapid depreciation but may not have taken complete advantage of those possibilities.

He recommends that companies reduce their income taxes by using rapid (declining balance) depreciation accounting while keeping their books under the more conventional straight-line depreciation. If equipment actually becomes obsolescent quickly, Stanley's system does not, of course, apply. He points out that although many firms already keep dual books, a large number still shy from rapid depreciation. They do this on the assumption that, as was the case with wartime certificates of necessity, it must be provable that the facilities deteriorate more rapidly at the beginning of their life than at the end. "It just isn't necessary to prove this," he says. He cites Bulletin 44 of the American Institute of Accountants, which states that there is absolutely no requirement that the same depreciation be charged on the books as for income taxes.

Stanley's approach is to take the amount of income taxes deferred in any one year under rapid depreciation, and charge them to income under ordinary book accounting as a reserve provision for future tax liability. This treatment equalizes income, so there is no change stemming from the adoption of rapid depreciation. If book depreciation were charged at the rapid rate used for tax deduction, he points out, net income would be reduced by the higher book charge, less the tax reduction for the current year.

Stanley's suggestion avoids unnecessary reduction of income at a time when the enterprise is going onstream and it is especially desirable to make a good showing. The company, by applying his system, gets the interest-free use of deferred taxes, but at the same time prevents deterioration of income at startup.

Although Stanley claims no originality in proposing the use of these money-saving systems, he emphasizes that such practices seldom are applied unless they are pointed out. Having successfully applied them, he is in a position to recommend their adoption whenever a company finds them suitable for its operations.

## LABOR

**Gulf Coast Strike:** This week is a crucial one along the Gulf Coast, where a strike is threatened by 26,000 oil workers in refineries and petrochemical units from Texas to Louisiana. The plans of the Oil, Chemical & Atomic Workers seem to hinge on Sinclair Oil Co., which has received a 15-day strike notice that expires Jan. 17. If Sinclair elects not to make any wage offers before then, OCAW President O. A. Knight is in a position to call the industry-wide strike. (Besides the threat by Gulf Coast workers, votes on striking have been taken among at least 35,000 more at other locations.)

**Productivity Problem:** Aluminum Co. of America last week laid off 140 employees at its Alcoa, Tenn., plant after a general shortage of electricity in the area forced a shutdown. The layoff was incidental to a dispute in which Alcoa claimed it would have to reduce its work force by 42 people and improve work quotas of those remaining. The 42-man layoff, rejected by Local 309, United Steelworkers Union, would have allowed a potline to remain in production, the company says, and permitted absorption of the 42 on a new potline to be started up later. Alcoa feels that operators are not giving a fair share of time to their work and have caused the Alcoa facility to be one of the most expensive to operate in the company. The union claims the opposite. Four potlines of 11 are currently shut down.

## LEGAL

**Property Annexation:** Five companies have signed a tax agreement with the La Porte, Tex., city commission. Cost to the companies: \$125,000/year for five years. The agreement calls for partial annexation of the companies' properties, protects the companies' property from annexation by other cities, as long as La Porte retains a protective U-shaped strip of land around them. (La Porte recently annexed this strip.)

Celanese Corp. of America and Du Pont have facilities along one side of the strip, which borders on the Houston Ship Channel. Phillips Petroleum has a large tract of land

*A little  
extra everything  
... except price*



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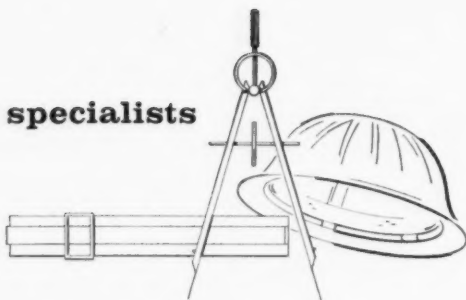


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## specialists



## chosen by specialists

The Girdler organization does not attempt to be many things to many people. Its objective is to perfect widely needed specific processes and to design and construct proper facilities for their use. The merit of this specialization is impressively demonstrated by the extent to which leading engineering and construction contractors regularly assign key portions of their projects to Girdler. Specialists chosen by specialists! When your planning involves any of the following requirements, you too will find it wise to rely on Girdler's unparalleled specialization.

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\*Meissner processes

Brochures containing descriptions, installation photographs, flow charts and technical data are available on many of the processes listed. Your request for information will receive prompt attention.

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CHEMETRON CORPORATION  
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chemical processes and process plants

CHEMETRON

## ADMINISTRATION

in the area. National Petroleum Chemicals Corp. has a plant located along another leg of the "U."

Complete annexation of these properties would have boosted the companies' property taxes considerably more than \$125,000/year.

## KEY CHANGES

**Edward G. Crum, G. Fred Hogg, John H. Long, Henry A. Thouron, J. H. Tyler McConnell** to directors, Hercules Powder Co. (Wilmington, Del.).

**Herbert H. Blevins** to controller, **Harold A. Rockwell** to treasurer, Merck & Co. (Rahway, N.J.).

**Francis A. E. Spitzer** to president, International Division, Interchemical Corp. (New York).

**Harold K. Daniels** to vice-president, personnel relations; **Carl Johnson** to vice-president, advertising and public relations; **Parke, Davis & Co.** (Detroit).

**Edward McLanahan Tittmann** to vice-president and director, American Smelting and Refining Co. (New York).

**Howard S. Cullman** to director, National Distillers and Chemical Corp.

**James A. Hughes** to secretary, **John A. Wilson** to director of law, Diamond Alkali Co. (Cleveland).

**R. E. Lenhard** to president, Air Reduction Sales Co., division of Air Reduction Co. (New York).

**Donald L. Price** to vice-president, Norton Co. (Worcester, Mass.).

**Frank P. Gage** to financial director, Wyeth International Ltd. (Philadelphia).

**J. H. Paden** to director of research, Organic Chemicals Division, American Cyanamid Co. (New York).

## RETIRED

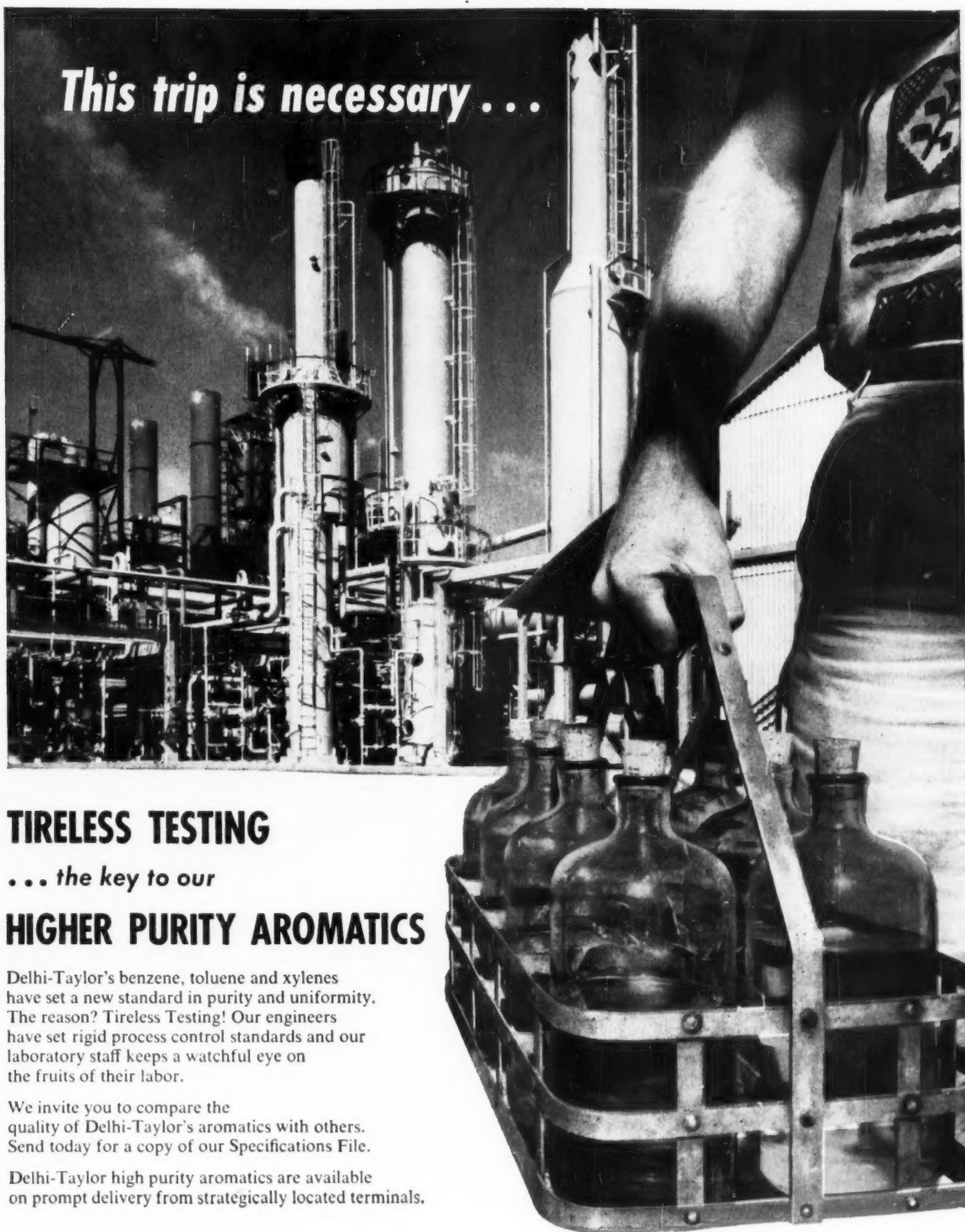
**Harry S. Howard**, chairman, Wyeth Laboratories (Philadelphia).

## DIED

**Donald G. Rogers**, 66, former president, National Aniline Division, Allied Chemical Corp., at Ridgewood, N.J.



***This trip is necessary . . .***



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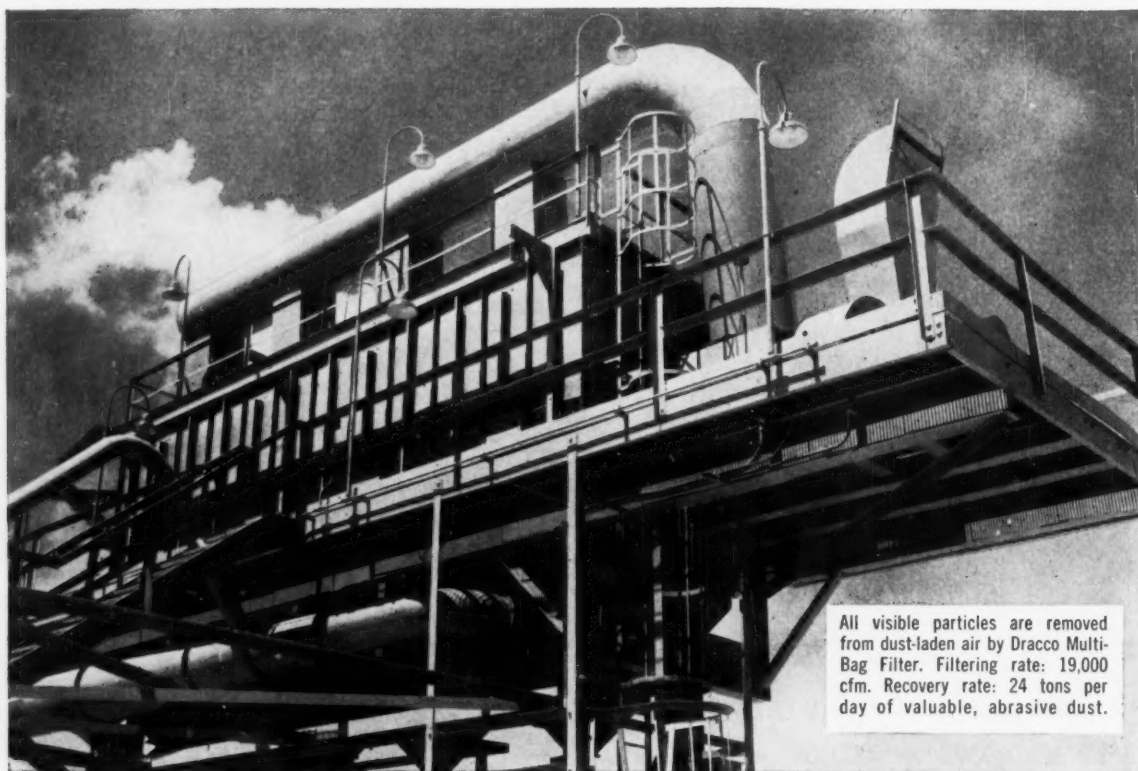


CHEMICAL DIVISION

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**DRACCO** *airstream conveyors*  
dust control equipment



Carrier Corp. top management\* inspects model of freeze unit soon to be tried in sea-water desalting.

## Readying Big Freeze for Water Desalting

Evidence of confidence that freezing is a potentially economical water-desalting method is the new model (above) of a 15,000-gal./day pilot plant to be built by Carrier Corp. (Syracuse, N.Y.). The company was just awarded a \$150,000 contract for a working unit by the Interior Dept.'s Office of Saline Water (CW Washington Newsletter, Jan. 3).

Carrier's process is the first freez-

\*L. to r., Board Chairman Cloud Wampler, President William Bynum, Vice-President of Research and Development J. F. Downie Smith.

ing method to reach the pilot-plant stage in this country, although some foreign concerns are reported to be piloting their versions. But the inherent advantages of freezing—low corrosion due to low temperatures and low energy needs, since heat of fusion is about one-seventh that of vaporization—make it a good bet to catch up with the current leading methods, distillation and electrodialysis (CW, Aug. 30, '58, p. 31).

Certainly, the number of freezing

projects, here and abroad, indicates widespread interest. Foreign countries most advanced in freezing work include Israel, Yugoslavia, Japan, France and Russia. U.S. organizations studying the technique include Cornell University (Ithaca, N.Y.), Applied Science Laboratories (State College, Pa.), Battelle Memorial Institute (Columbus, O.), and the universities of Washington (Seattle) and Texas (Austin). All of these domestic researchers are now, or were at one time, work-



## how to trap a ghost



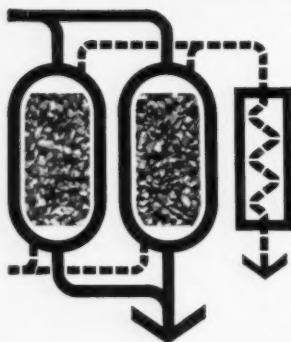
Before solvent vapors fly out the window, many smart users literally wring them out of the air into liquid form, good as new, at costs as low as 2c a gallon—with activated charcoal recovery systems. Bonus: you may also raise worker efficiency with the right atmosphere, reduce heating costs.

## how to keep your spirits



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## ENGINEERING

ing on an OSW contract. Esso Research & Engineering Co. is doing independent research on a freezing technique, for which it has made patent application (30,933/57) in Australia.

Carrier's position as the only commercial equipment manufacturer with an advanced project gives it a decided edge among domestic equipment makers, should the technique become commercially useful. The company expects the new pilot-test program to be completed in the first half of '60, hopes to qualify then for one of the million-gallons-a-day demonstration units authorized by Congress.

Although neither Carrier nor OSW has set any firm goals for the pilot test, the company's board chairman, Cloud Wampler, says, "We expect the pilot operation to show that the direct-freeze process is capable of meeting the objectives specified by the Dept. of Interior." A goal formerly used by OSW was a total cost of around 40¢/1,000 gal. of purified water. OSW currently talks in more general terms but has not officially changed its earlier objectives. OSW Director David Jenkins has predicted that freezing process costs will go as low as 50¢/1,000 gal. sometime in the '60s, which would make them comparable to the anticipated costs of other methods.

**Direct Freezing:** The principle of the Carrier method is to freeze the water directly rather than chill it with circulating refrigerants. Squirted into a high-vacuum chamber, about 15% of the salt water evaporates; the remainder freezes into a slush of relatively pure ice crystals in brine. The slush is washed by countercurrent water flow in a separator column and the "cleaned," pure ice then melted as the vapor from the freezing column condenses on it.

The problems involved include efficient washing of the crystals (especially since part of the product is used to do the washing), ice clogging, freezing efficiency and economical equipment design. In an OSW-sponsored survey of existing refrigeration equipment, University of Washington researchers reported that new types would have to be designed to cut the high fixed costs of the freezing method. Carrier, in a progress report about a year ago, said virtually the same thing. Its enlarged pilot program is aimed at finding if equipment now de-

signed for the new direct-freeze process will work well enough, and also at ironing out the other problems.

**Finding the Answers:** Also trying to solve these problems is Prof. H. F. Wiegandt at Cornell, who is developing another direct-freeze system. In his method, an immiscible refrigerant, such as isobutane, is vaporized in direct contact with the salt water. The resulting ice crystals are washed by a countercurrent flow of water. Although his work is still in the experimental stage, it stands a good chance of being carried to the next step—the building of a working model.

Applied Science Laboratories has devoted its work to basic studies, such as attempts to increase the size of the ice crystals, to change their shape to reduce surface area, to use non-aqueous liquids for washing.

OSW work is still being carried on at the ASL labs. And serving as consultant on refrigeration to OSW is Dean W. R. Woolrich, of the University of Texas. On the other hand, Battelle's zone-freezing project (similar in principle to purification of metals by zone melting) has been suspended at least until the next fiscal year because of a shortage of OSW funds.

**Foreign Progress:** A number of foreign companies and governments have made progress in developing freezing methods, but secrecy in some cases makes it hard to evaluate just how far along these projects are. One of these—developed by Alexander Zarchin—has advanced to the point where the Israeli government has started building a plant on the Mediterranean coast, but details of the plant and its progress have been withheld. However, a recent Australian patent application (38,287/58) by Zarchin indicates he has worked on a process quite similar to Carrier's. It's also a direct-freeze method, involving the evaporation of part of the raw water to freeze the remainder, removal of brine from the ice and condensation of the water vapor on the ice. A feature of the method is pre-cooling of the salt water by heat exchange with the melting ice.

Other foreign projects in the freezing parade include:

- Yugoslavia is reported to have a pilot plant at Metalurski Institut (Ljubljana) for producing drinking water from sea water by a process



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	FLASH POINT, TCC *F			114
COLOR	MIXED ANALINE POINT — 1:1 RATIO °C			16.5
	KAURI BUTANOL VALUE			92
WEIGHT	SAYBOLT			30
WEIGHT	GRAVITY *API @ 60°F (15.56°C)			30.4
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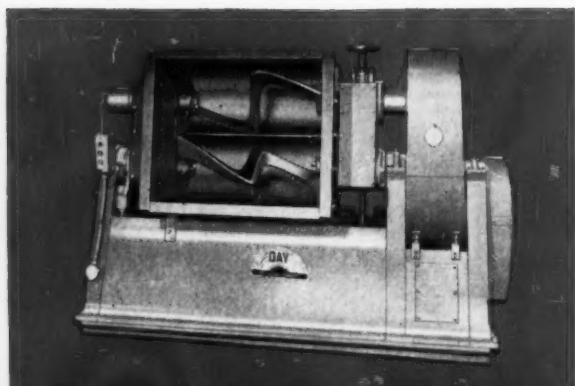
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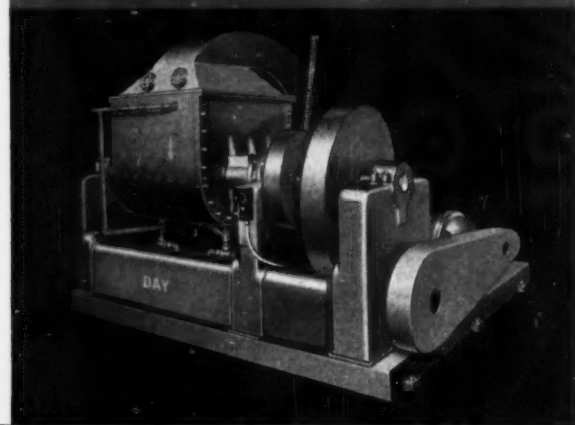
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## ENGINEERING

that involves the production of snow crystals.

- Two Japanese freezing projects are aimed at producing low-salinity brackish water for irrigation and also for salt-making.

- France is in the running with a freezing method that Refroidisseur Trépaud, S.A. (Paris), is working on with the collaboration of Brown, Boveri & Co. (Baden, Switzerland).

- Soviet projects take advantage of natural freezing conditions where thawing weather is available at least part of the day.

The next few years should tell whether freezing methods will take a leading position in the worldwide race to desalt sea water economically.

## Infrared Control

In a survey of 150 users of its Infracord spectrophotometer, Perkin-Elmer Corp. (Norwalk, Conn.) finds a growing trend toward the use of infrared analysis for processing and manufacturing control.

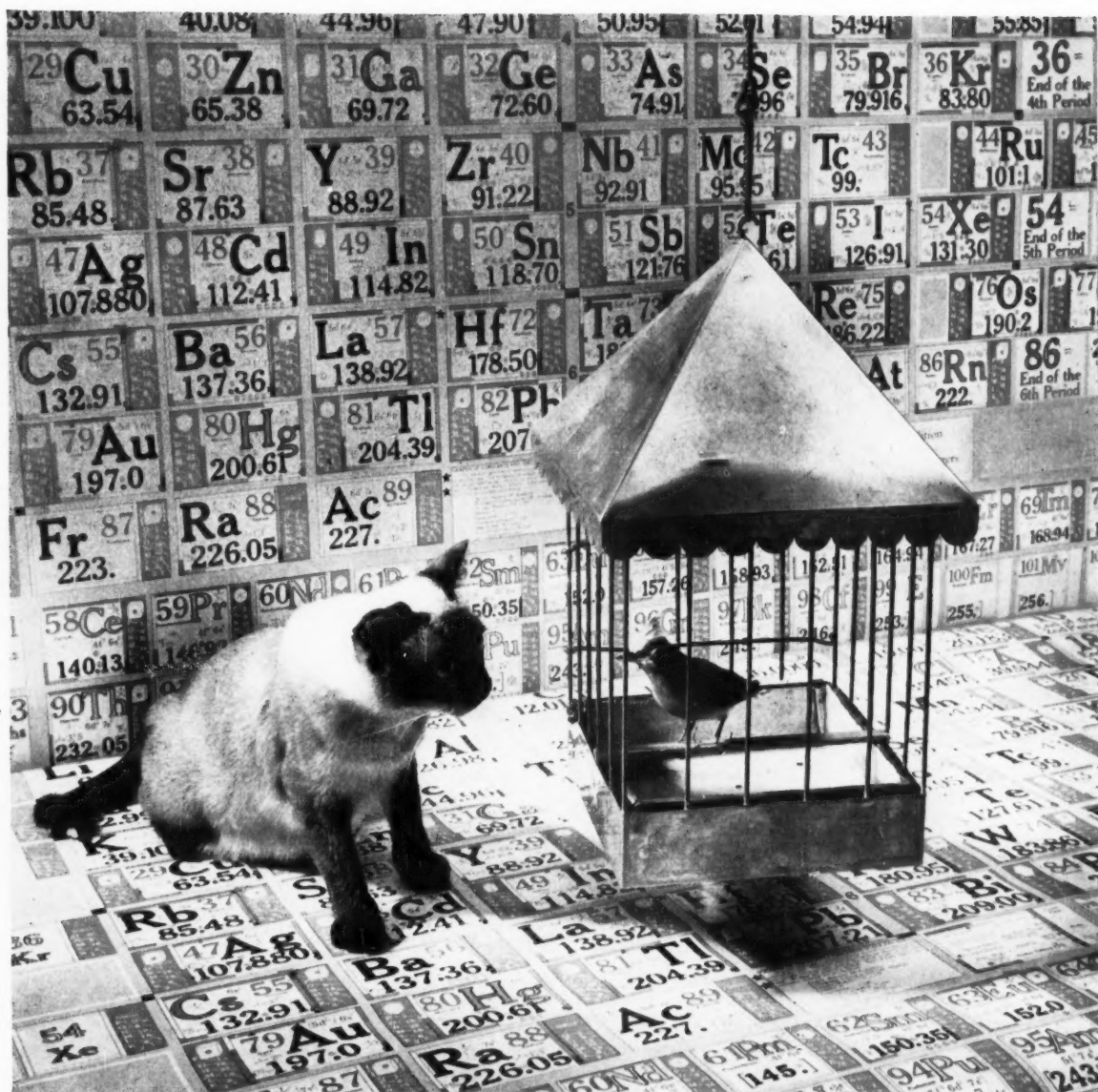
The breakdown of survey returns indicates that over half of the 550 Infracords sold during the first 18 months of production went to new users; that control operations account for about 20% of infrared instrument applications.

Here's how some companies are using the instrument for routine control checks, and preliminary screening of products.

- The Merck Sharp & Dohme Research Laboratories (Rahway, N.J.) uses it for determining identity of complex chemicals, reports that determination of infrared spectra helps reduce the possibility of mislabeling intermediates and final products.

- The control division of Endo Laboratories (Richmond Hill, N.Y.) uses infrared analyses to check quality of products at all stages of manufacture, says that much waste is prevented by early detection of impurities. Unlike conventional analytical methods that require 2½-3 days for complete analysis of complex drug mixtures, infrared provides a check in 25-30 minutes.

- Celanese Corp. of America says infrared techniques halved the costs of certain chemical testing operations used for determining proper ratios as well as quantities of plastics raw materials.



Periodic Chart of the Atoms, Copyright W. M. Welch Mfg. Company, Chicago

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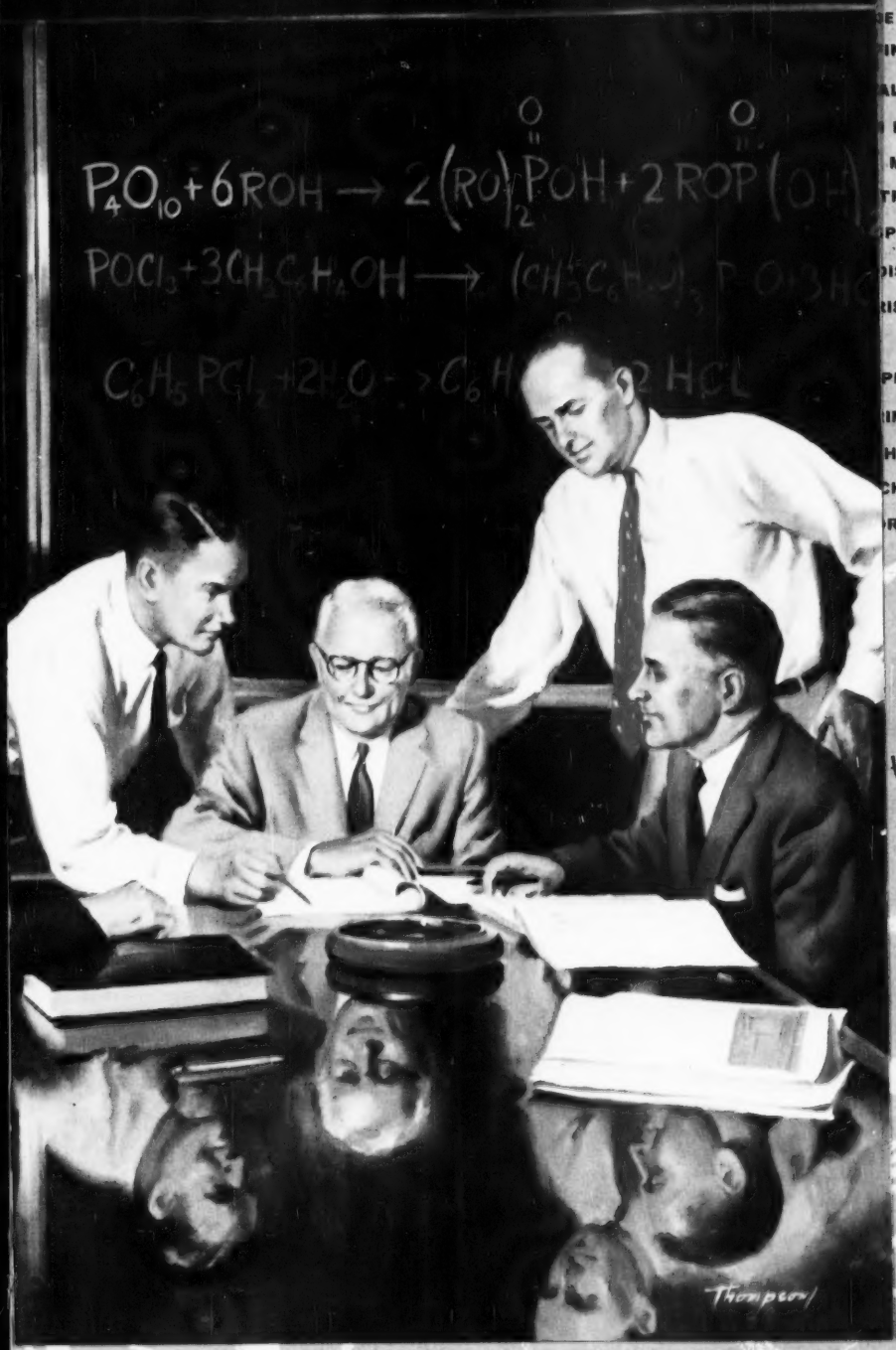
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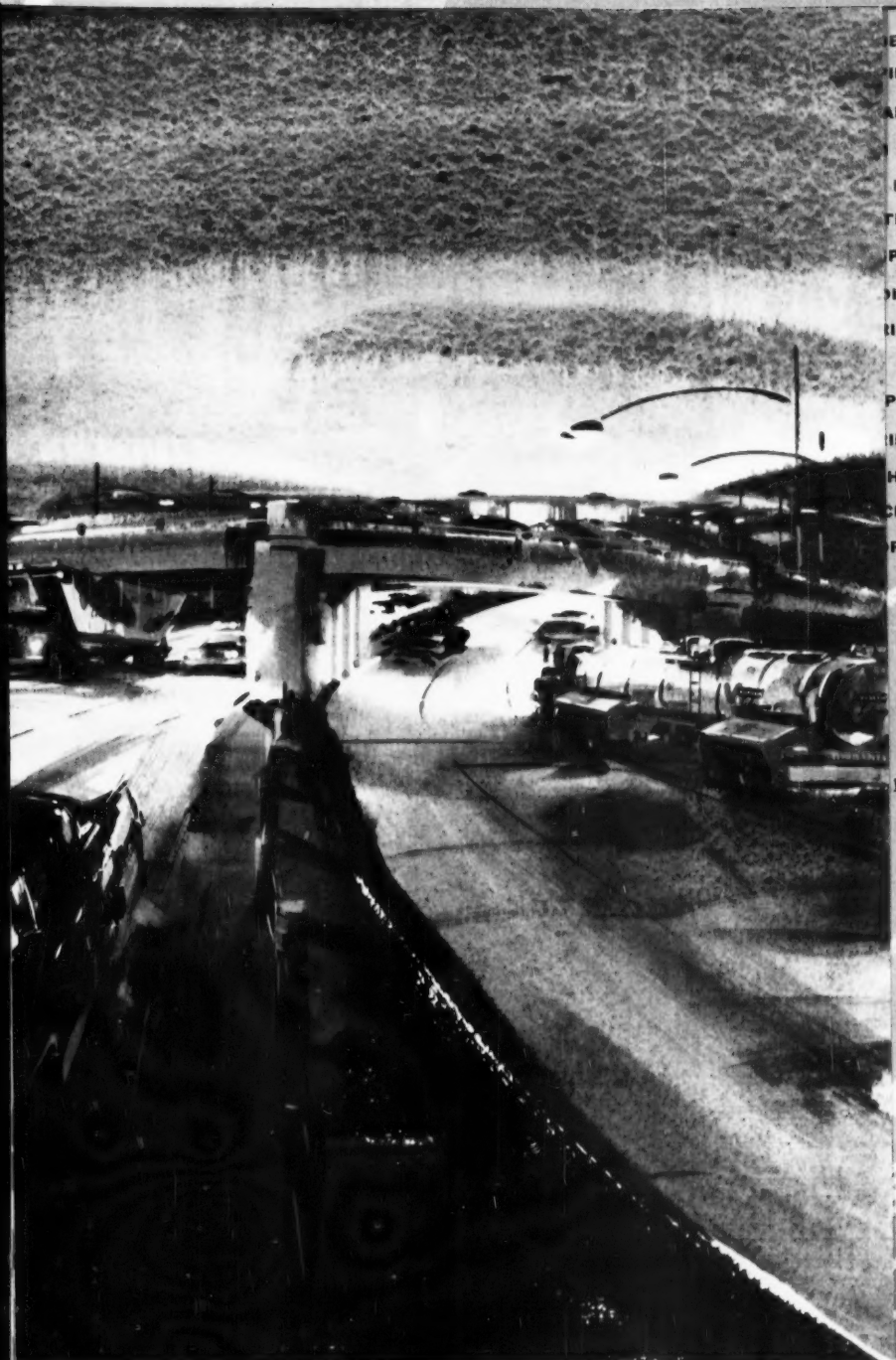
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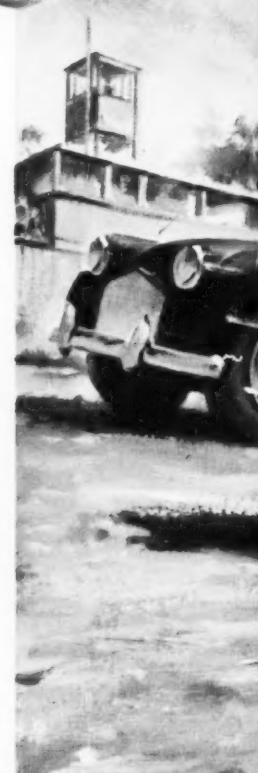
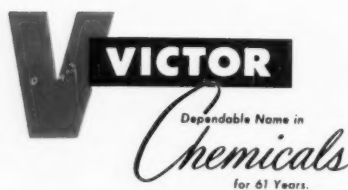
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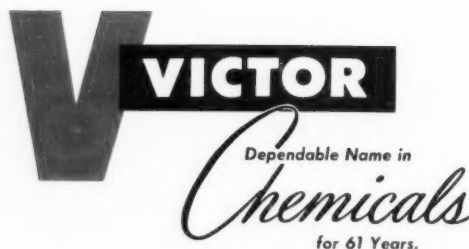
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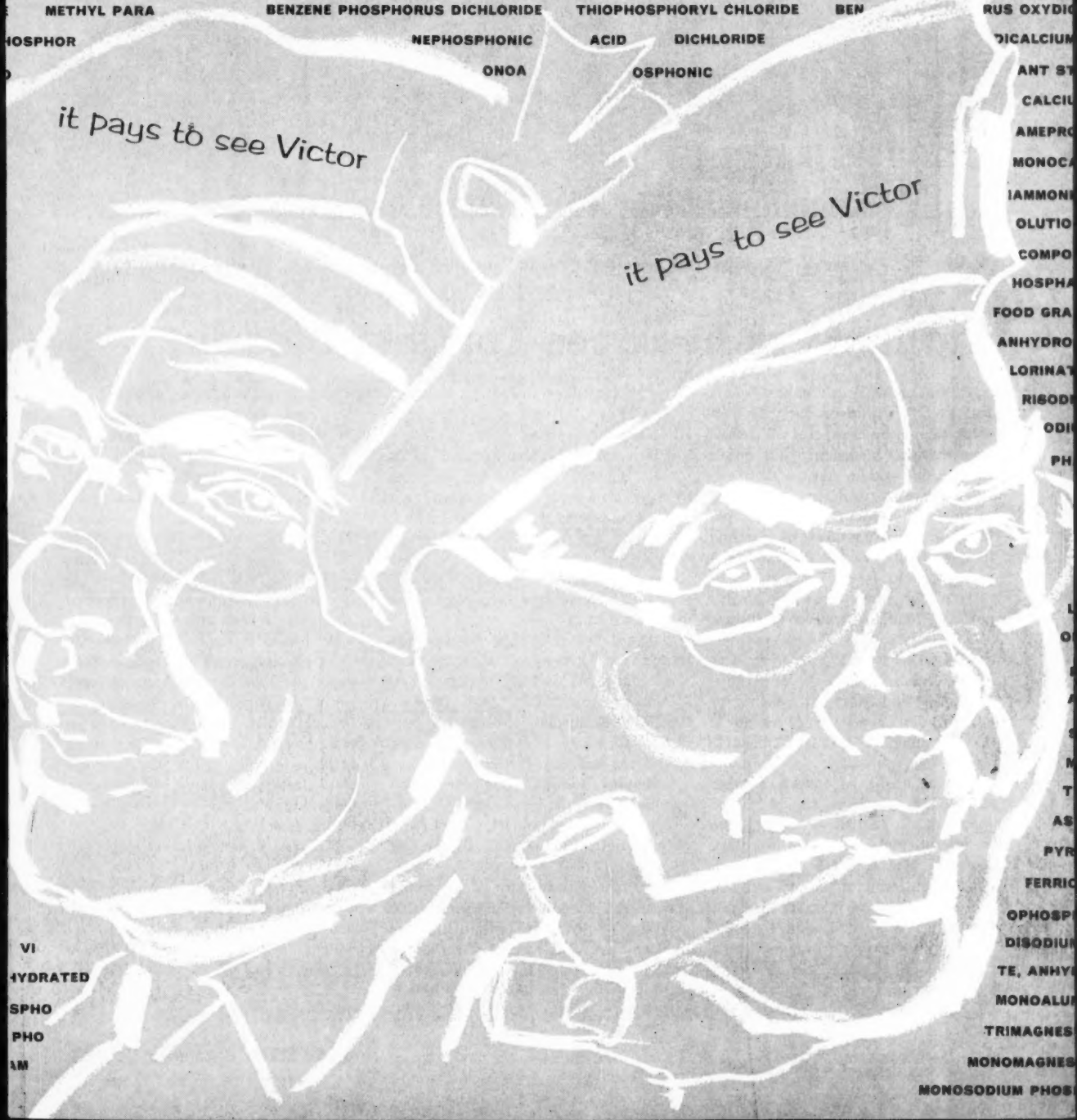
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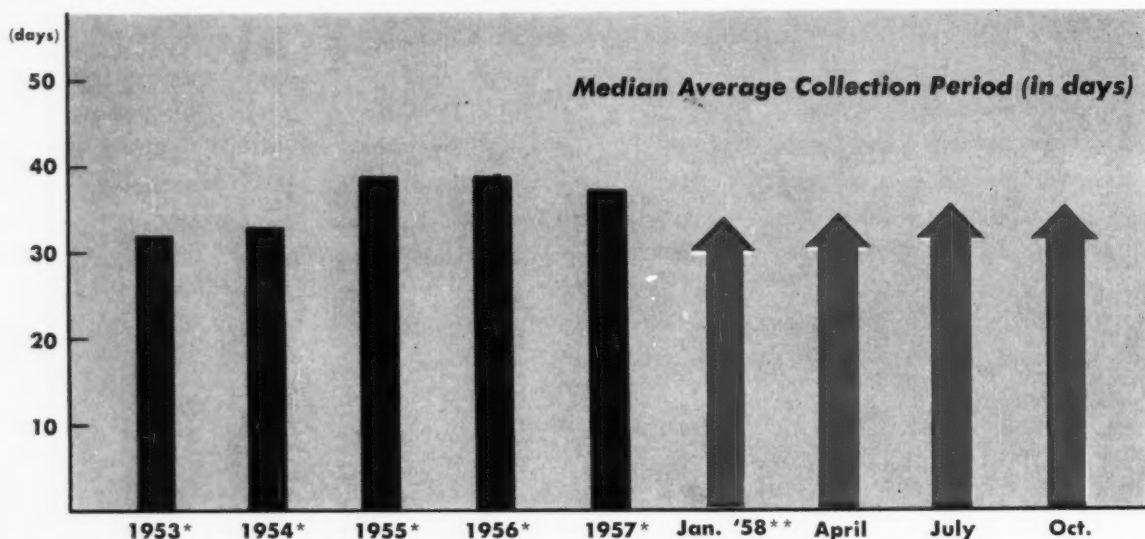


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# SALES AND DISTRIBUTION

## On Collections, Better Days Ahead?



Sources: \*Dun & Bradstreet; \*\*Credit Research Foundation. Note: D&B and CRF figures are not directly comparable.

## Tighter Credit Faces Tougher Sledding

Despite a business recovery, chemical credit executives are edgy this week about the prospects of decided improvement in lagging bill collections. Competition, keener than ever in traditional problem areas, will probably preclude tighter credit policies. And there's a threat of loosening term structures in the fast-expanding petrochemical field.

That's why credit-man opinion in a new *CW* roundup points to status quo for '59 — about 37-39 days' payment time. That's a none-too-desirable level. About equal numbers of credit managers, *CW* finds, forecast a slight rise, a slight dip or no change at all in the '59 median average collection period.

Lagging credit, of courses, pinches a supplier's working capital. More important, it tends to reduce the profit potential of good inventory turnover. Hence, credit is an area management watches intently.

Figures from the Credit Research Foundation show collection times of 35 days in October, compared with 33.2—33.8 days earlier in the year. CRF's data also shows a decrease in the percentage of accounts current

in '58, from 85% in January to 83.5% in October.

Generally, credit men checked by *CW* confirm the trend shown by the CRF figures. The slow-up was especially noticeable in the second and third quarters, with improvement in the last two months. Bad-debt write-offs were the bright spot in '58; most companies tell *CW* that losses ran far behind expectations, often well under 0.2% of sales.

The slowdown in early '58, say most credit men, stemmed directly from the recession. Medium and small customers, faced with rough financial conditions, turned to their big suppliers for aid in weathering the storm. And the aid was forthcoming.

**Helping Hand:** *CW* finds few companies now adhering to strongly conservative credit policies. This is in sharp contrast with the situation a few years ago (*CW*, April 6, '57, p. 75), when many companies were trying to maintain traditionally conservative policies — payment within the invoiced "net 30 days." Almost without exception, chemical credit managers report they "meet the competition." Dealing with slow-paying industries

means credit extensions of 30, 60 and 90 days. In exceptional cases, extensions run much longer (up to six months in some export markets).

**Tough Going:** Agricultural chemicals, plastics, air products and export buyers remain traditionally slow-paying. Ag chemical firms report increasing requests for extended terms for fertilizers and insecticides in the South and Southwest. A reported sharp rise in new mixers in the Midwest has compounded the problem.

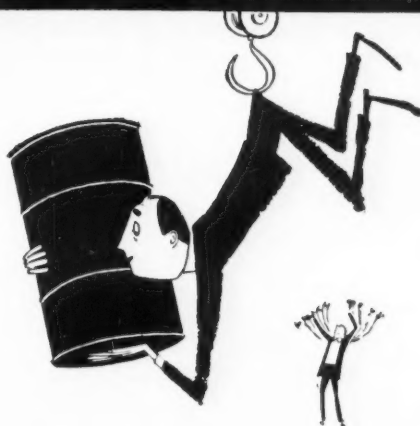
In plastics, credit structures remain generally chaotic, although some slight improvement is reported in thermoplastics. Some polyethylene film extruders and tile producers tend to become tardy in bill paying. Polyvinyl acetate monomer and polyester users are also paying more slowly, as are most users of plastics for toys and some buyers of adhesives for plywood.

Some trend to slower collections in auto chemicals (specialties), medicinal alcohol and explosives is also evident. Payment for air products by small companies and export sales in general showed no real improvement. And several companies

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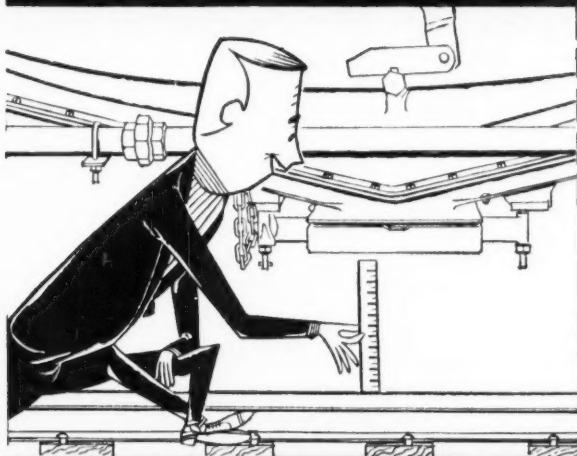
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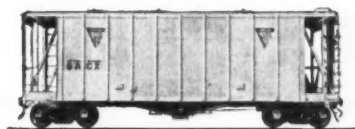
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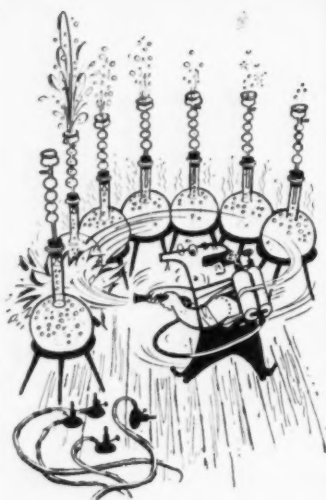


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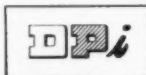
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## SALES

may extend payment periods for packaged antifreeze slightly past the normal seasonal datings.

**Lifeline:** Saving the situation for most companies is the prompt-payment record of most large companies. Few credit men report problems here. And because sales to large firms account for the larger part of most big producers' sales, the effect of slow payments by small companies is often largely mitigated. One large diversified producer estimated that 75% of its business was generated by companies with annual sales over \$10 million/year.

But industrial chemical credit isn't the only bright spot in the payment picture. Some managers note improvement in metals, electronic chemicals, dishware plastics and industrial urea. Others expect improvement in building trades. Opinion splits, however, on credit experience with the paint and varnish industries.

**'59 Outlook:** Forecasts of both deterioration and improvement in '59 collections, coupled with many predictions of "no change," indicate that '59 collection experience will parallel that of '58. But improving business conditions may put more capital into the hands of smaller firms, bring payment improvement.

Bad-debt losses, however, will likely increase. Reason: current loss rate is apparently at a fortunate but irreducible low; any change will likely be in the direction of incurrence of greater debt losses.

Credit pessimists, however, can also muster convincing reasons for a slight payment slowdown. Mainly, they contend that the competitive situation is such that few companies can afford an ultraconservative policy. And although business has improved markedly, smaller accounts still face profit difficulties and high costs. Companies in ag chemicals and plastics remain generally undercapitalized and lack business know-how. And both optimists and pessimists report increasing requests in many fields for longer terms and special arrangements. With the industry suffering from few capacity shortages and with more expansion planned, liberal credit policies are likely to remain in effect.

**Petrochemical Change?** The big uncertainty right now is the petrochemical field. Repeatedly, *CW* heard reports of easier credit plans for such

items as methanol, some plasticizers, aromatics and phthalic anhydride.

One fairly new petrochemical producer, now selling chiefly to large industrial accounts, expects to broaden marketing to small users, may extend liberal credit lines and payments. Another major petrochemical producer, known for conservative policies, is planning to abandon them in '59 "to meet competition."

At the moment, few companies are experiencing any real trouble collecting for petrochemicals (apart from plastics and anhydrous ammonia). But they fear that as more petroleum companies come in, they will force razor-edge competition and lead to a "sell-at-any-means" philosophy. If that develops, term structures could be shaken.

**More Education:** Matching the general "status quo" outlook for '59, most companies contacted by *CW* are planning few changes in credit operations. Plans to shorten the average collection period, through such devices as interest charges on accounts past due and heavy pressure on poor payers, which were much in evidence two years ago, are not apparent now. These schemes were not especially effective.

Some increased emphasis, however, will be placed on credit and business management education for small customers (*CW*, April 5, '58, p. 31). Credit executives feel that this approach now holds the most promise of solving traditional problems in ag chemicals and plastics.

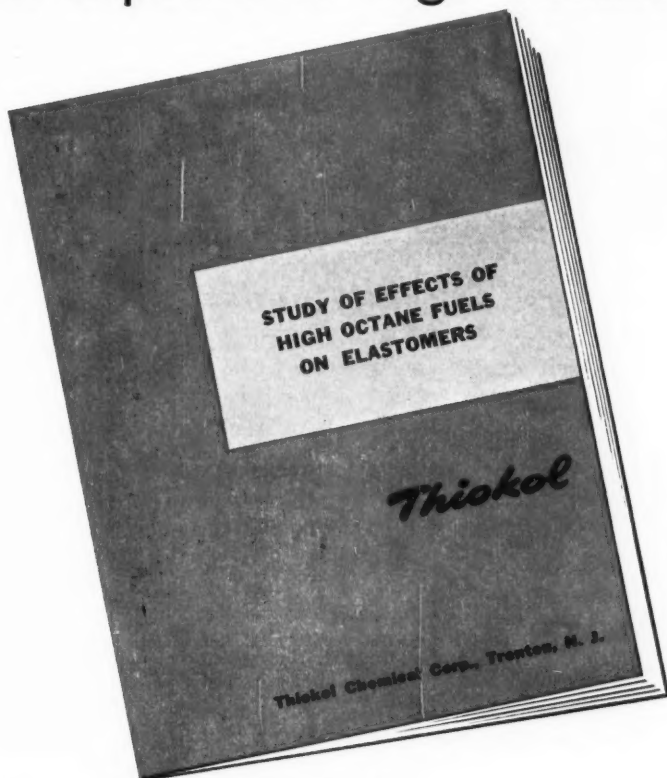
In this approach, credit personnel visit customers and recommend sound accounting procedures, cost control, even help arrange for bank loans. One large chemical firm is especially hopeful of steering customers to banks for credit money rather than extending longer terms.

The payoff for improved collections is substantial. One executive estimated that on a 20% profit basis (before taxes and sales and administrative overhead) the profit in a year on \$1,000 capital would amount to \$1,200 if inventory were turned over six times. If lagging collections slowed the turnover to four times, the profit loss would amount to 33%.

It's for just such reasons that credit management aims at improving collections. But the goal will be hard to reach in '59.



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Unsaponifiable content	1.5% max.	2.0% max.
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We would like you to see our Oleic Acids and compare them critically with other competitive products, so you may fully appreciate Century Brand quality. We invite your comparison of Century Brand Oleic Acids because only you can realize their advantages in your products.

A request to Dept. H-30 for samples will receive prompt attention and we will welcome the opportunity to put these better products in your hands.



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CENTURY BRAND

**HARCHEM DIVISION**

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### for Automatic Batch Control Continuous Blending Materials Accounting

Control the feeding of ingredients by weight to an accuracy of 1%.

Capacities range from 3 to 3000 lbs. per min.

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**WALLACE & TIERNAN INCORPORATED**  
25 MAIN STREET, BELLEVILLE 9, NEW JERSEY

M-31.24

## SALES

### Buyers Seek Full Value

Chemical purchasing agents have now settled program plans for their annual midwinter meetings. Taking a bead on the challenges facing the profession, the sessions will range wide—from new raw materials to ways of getting the most value from suppliers.

The morning and early afternoon agenda in Chicago (Hotel Congress, Jan. 22) and in New York (Hotel Commodore, Feb. 3) are identical. The schedule:

- "New Chemical Materials of the Future"—H. H. Ewing, development department (Du Pont).
- "Changing World Chemical Markets"—W. D. Morrison, manager, chemical operations department (Food Machinery and Chemical Corp.).
- "Controlling Profit Elements of Purchasing"—Richard Taylor (McKinsey & Co.).
- "Economic Outlook"—A. F. Kroeger (A. & H. Kroeger Organization).
- "Economic Evaluation Guides to Raw-Material Purchasing"—A. T. Bogen, Jr., engineering superintendent (Chemstrand Corp.).

Panel discussions manned by purchasing agents and sales executives are also scheduled. Although the Chicago and New York sessions will cover the same topic, "Generating Full Value from Suppliers," the speakers' slates will be different.

### New Hopper Car Debut

A new type of hopper car with internal unloading gates made its debut this week in Chicago. Dubbed "Dry-Flo" by its maker, General American Transportation Co. (GATX), the car is slated for service in carrying a wide range of dry chemicals, detergents, polystyrene, polyethylene and food products.

Main advantages of internal unloading gates, says GATX: reduced contamination problems, simplified cleaning, increased rail clearance of gate outlets.

The car will be available in single-hopper or compartmentalized versions and in two sizes, 2,450 and 3,500 cu. ft. Integral vacuum unloading nozzles will be optional.

Discharge outlets, says GATX, are located to permit cargo handling with all existing systems.



**ALL OF YOUR LIFE**



**YOU TRAVEL ON TIRES**



**IMPROVED BY ATLANTIC OLEFINS**

Olefins are hydrocarbons used in making anti-oxidants, which inhibit dangerous drying-out effects caused by oxidation. In addition, anti-oxidants and other rubber chemicals based on Atlantic Olefins help stabilize the rubber against degradation due to heat and light. Result: the customer gets a tire that shrugs off abrasion and is stronger under stress.

Olefins are also used to make quality resins for heavy-duty varnishes, in manufacturing rubber chemicals, germicides, insecticides, dyes and surface active agents.

Your own business may have use for Olefins or any one of our wide variety of Atlantic petrochemicals. For more details, write or wire Chemicals Division, The Atlantic Refining Company, Philadelphia 1, Pennsylvania.



**PHILADELPHIA • PROVIDENCE • CHARLOTTE • CHICAGO • LOS ANGELES**

**In Canada:** Naugatuck Chemicals, Division of Dominion Rubber Company, Ltd.

**In Europe:** Atlantic Chemicals SAB, Antwerp, Belgium

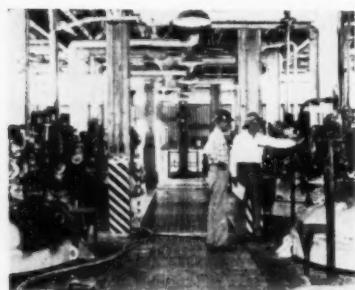
**In South America:** Atlantic Refining Company of Brazil, Rio de Janeiro

# PFAUDLER



## How Diamond Alkali uses Glasteel to cut turnaround time and protect purity at its PVC plant

Like most polymers, polyvinyl chloride gets so sticky in process that it gums up equipment surfaces to the point that a general clean-out is usually required after each batch.



Wishing to avoid such unproductive, unprofitable time at its new Deer Park, Texas, plant, the Diamond Alkali Company instructed its engi-

neers to run comparative tests on materials of construction.

Pfaudler Glasteel was the final choice and Diamond Alkali uses it wherever possible in the new plant . . . for polymerizers, blow-down tanks, storage and receiver tanks, and even for pipes and valves.

So little of the PVC clings to the smooth glassed surfaces of this equipment, a simple fast flush is all that's necessary to keep it in process condition.

During two years of operation, on a twenty-four hour a day basis, production has been halted only for routine maintenance.

### Protects purity too

Pfaudler Glasteel is chemically inert to the ingredients and catalysts used in making PVC . . . so there can never be any contamination of Diamond Alkali's product.

Special agitator seals on the poly-

merizers prevent any lubricants from bleeding into the product.

The equipment is so designed and controlled that Diamond Alkali can hold temperatures to within  $\frac{1}{2}$ ° F. of a desired setting.

If you would like to know more about Pfaudler Glasteel and the equipment made with it, check the coupon for our Bulletins 968 and 932.

## Big zirconium and titanium heat exchangers now available

Recently Pfaudler added vacuum-purge inert gas welding to the already established flow-purge welding chamber shown below. This places Pfaudler in the advantageous position of offering the most advanced facilities for welding titanium and zirconium. Several hundred square feet of heat transfer surface can be produced economically and rapidly.

Add these metals to your list of available Pfaudler materials for fighting corrosion in process equipment—an ever-growing list that already includes Glasteel, stainless steel, Hastelloy, nickel, Inconel, and Monel.

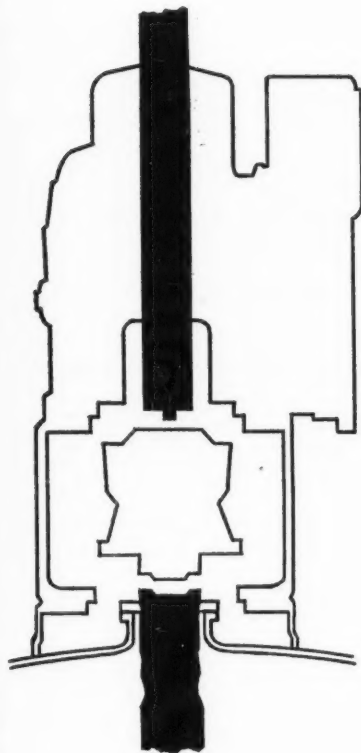


The unit being worked on in the picture is one of the largest zirconium exchangers built to date, having 134 square feet of heat transfer area. Sixty-four 1" O.D. 18 gauge seamless zirconium tubes in a 21" O.D. shell 8' long. Designed for 75 psi and 350° F., it forms the calandria section of an evaporator for concentrating hydrogen peroxide solutions.

Pfaudler Bulletin No. 949 describes the complete line of metal and alloy heat exchangers. Heat transfer equipment of Glasteel construction is covered in Bulletins No. 921 and No. 886. Send the coupon for copies.



# CORROSIONEERING NEWS



## With Pfaudlerpac you can change a seal or stuffing box in minutes

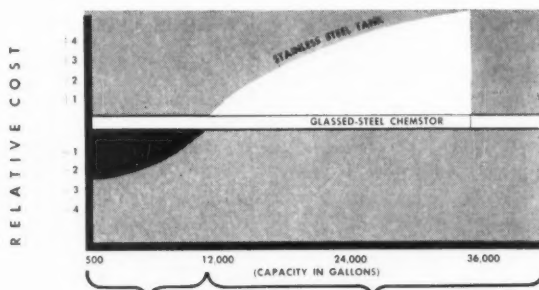
Pfaudlerpac seals and stuffing boxes come to you as pre-assembled, pre-tested units ready for installation.

On our new BH Drive you can change these seals and stuffing boxes *without* entering the vessel, removing the drive, or disturbing alignment.

**Pfaudlerpac Seals** are especially recommended for service in high temperatures or pressures, and where vapors are highly corrosive, explosive, or toxic. They are rotary types with glassed sleeves which eliminate the dangers of metallic contamination or corrosion.

**Pfaudlerpac Stuffing Boxes** are economical units for use in moderate temperatures and pressures. They are the non-rotary type with Hastelloy shielded sleeves. Glassed or alloy shoulders with Teflon gaskets prevent corrosion from reactor vapors.

For more information on Pfaudlerpac, check the coupon for Bul. 972.



If you store this much  
of chemicals like these . . .

Acetic acid	Chloroform
Aluminum chloride	DDT
Aluminum sulfate	Ether
Ammonium thiocyanate	Ethylene glycol
Ascorbic acid	Formaldehyde
Benzene	Hydrochloric acid
Benzyl chloride	Nitric acid
Butyl alcohol	Phenol
Bromine	Phosphoric acid
Caustic soda	Phosphorus oxychloride
Chlorine dioxide	Potassium sulfate
Monochloro-acetic acid	Sodium chlorate
	Sulfuric acid
	Thionyl chloride

then the price of Chemstor glassed-steel tanks tells only half the story. Subtract from this price the extra years of service which only glassed steel can give you with so many corrosives. As a point of fact, only hydrofluoric acid and fairly harsh alkalis have any appreciable corrosive effect on Chemstor tanks.

If you store this much  
of practically anything . . .

then you'll want Chemstor glassed-steel tanks simply on a price basis. You can pocket the extra years of service life given by glassed steel as a sort of dividend.

**Some other facts about Chemstor tanks**  
**Smoother** than even the most highly finished metal or plastic, Chemstor tanks are ideal for sticky storage; they discourage clinging, scale, and product build-up like any glass container.

**Chemically inert** glass is all that ever touches your product in a Chemstor, so you never need worry about contamination or influence on your product's flavor, color, etc.

**Surprisingly strong**, glass bonded to steel is actually a very rugged material. Chemstor tanks require only sensible handling and maintenance to insure long years of service.

Write for Bulletin 918 for more information.

## PROCESS EQUIPMENT by THE PFAUDLER CO.

a division of PFAUDLER PERMUTIT INC.  
Dept. CW-19, Rochester 3, New York

Please send me: ☐ Bul. 968, Buyer's Guide to Corrosion Resistant Process Equipment; ☐ Bul. 932, Polymerizers; ☐ Bul. 949, Heat Exchangers; ☐ Buls. 921 and 886, Glasteel Construction; ☐ Bul. 972, BH Drive; ☐ Bul. 918, Chemstor Tanks

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See Chemical Engineering Catalog, pp. 1515 to 1526, for complete Pfaudler line.



# RESEARCH

## UNRESTRICTED AID—TREND IN CPI GRANTS

CPI's grants— Representative contributors	Less for fellowships			But total aid rises		
	1956-57	1957-58	Change	1956-57	1957-58	Change
Standard Oil of California	\$78,000	\$70,500	— 9.6%	\$601,277	\$695,000	+15.6%
Shell Foundation	94,200	103,000	+ 9.4	504,000*	558,000	+10.7
Procter & Gamble Fund	110,000	110,000	0	873,000*	900,000	+ 3.0
General Foods Fund	12,000	12,000	0	288,000	359,000	+24.7
Eastman Kodak	100,000	120,000	+20.0	600,000	630,000	+ 5.0
Du Pont	190,000	165,000**	—13.1	930,000**	1,173,000‡	+23.4
Union Carbide	450,000	470,000	+ 4.5	1,300,000	1,500,000	+15.4
Socony Mobil	76,000	76,000	0	672,000	875,000	+30.1
Smith Kline & French	59,200*	49,554	—16.3	284,300	418,980	+47.5
Dow Chemical	138,000	146,500	+ 6.2	320,000	310,000	— 3.1

Figures from Council for Financial Aid to Education, and CW survey; \* 1955-56; \*\* 1958-59; ‡ 1959-60; † varies with number

## Colleges Collect 'Carte Blanche'

Chemical companies are spending more on aid to educational institutions—and there are fewer strings attached. Du Pont, which last week revealed it has awarded \$1.2 million in educational grants for 1959-60 (CW Technology Newsletter, Jan. 10), is a case in point.

Grants totaling \$696,000—an increase of \$45,000 over the current academic year—were awarded to more than 100 colleges and universities, mainly to support the teaching

of science and mathematics.

Du Pont also boosted its grants for unrestricted research in the physical sciences, peeling off \$450,000 for this purpose. That's nearly double the amount Du Pont allotted for this purpose a decade ago, when it started such grants.

While the trend is only gradual (see table), there's no mistaking a new awareness by CPI firms that unrestricted aid—money that may be applied to faculty salaries, new equip-

ment, or the like—is gaining at the expense of grants earmarked exclusively for graduate fellowships.

**Federal Fellowships:** A big consideration in the decline of fellowships is undoubtedly the rise in government aid to students under the Science and Technology Act of 1958 and the National Defense Education Act of 1958. Merck Sharp & Dohme, for example has had a postdoctoral fellowship program since '46, but now tells CW it has let grants "dwin-

## TO EDUCATION

### Gainer: 'no strings' aid

1956-57	1957-58	Change
\$107,500	\$107,500	0%
59,000	59,000	0
180,000	310,000	+73.0
75,000	100,000	+33.0
315,000†	280,000†	-11.1
430,000**	450,000‡	+ 4.7
not available		
none	54,000	+
78,000*	130,500	+67.0
153,000	143,000	- 6.5

of college-trained employees.

## CPI Cash

dle to nothing" because the government is contributing heavily in that field and because the firm believes it can channel its available funds into other, more needed, educational support.

The government reports that for '59 the National Science Foundation awarded \$12.7 million, and the Atomic Energy Commission \$300,000, for fellowships. And the Dept. of Health, Education & Welfare plans grants totaling \$49.5 million for fellowships

for at least the next six years.

There are other reasons, too, for the changing CPI attitude toward fellowships. Procter & Gamble President Howard Morgens believes unrestricted aid is "the best way to help colleges meet pressing financial needs." More than half of the company's grants for educational purposes may be used in a flexible manner by academic recipients.

**Shunning Specificity:** CPI firms also try to spread their assistance to as large a number of schools as possible. This has become quite a complex matter in some companies, which now employ full-time college-aid coordinators to regulate the program. But coordinating is easier when large amounts aren't assigned for specific purposes. Furthermore, fellowships for one year, rather than those for two or three years that hinge on completion of an academic project, are preferred. None of the companies surveyed attach employment strings to fellowships or choose recipients on the basis of thesis subjects.

In modifying its attitude toward aid to education, the CPI appears to be following a trend that cuts across all industries. A recent survey\* by the Council for Financial Aid to Education (New York) bears this out. According to the survey, unrestricted gifts to education accounted for 26.3% of total grants in '52. In '56, they took a 37.5% share.

Frank Sparks, president of the council, believes the CPI is giving more aid to education "as a result of forward-looking management and increased profits."

He says industry sets down these steps for determining how much a firm should give: "Create a management attitude that aid to education is important in a democratic society. Consider that it is better to support schools voluntarily than to be taxed for this support. Then give in proportion to your profits, not your sales."

Several CPI firms tell *CW* they are "marking time" in considering the shift to more unrestricted aid. But many are already sure that untrammelled gifts are bound to be the most appreciated and beneficial.

\*"Leaders and Followers," a study of voluntary gifts to education by 275 major U.S. companies.

## A-Shot for Shale Oil

In a two-day meeting in Dallas, Tex., last week, Bureau of Mines and Atomic Energy Commission offered oil and chemical companies a plan to obtain oil from shale via nuclear explosion followed by thermal recovery. Industry would be asked to put up \$1.2 million of the \$2.5 million the experiment is expected to cost.

About 125 industry representatives were among a group of 190 conferees who heard Bureau of Mines' Harold M. Thorne (director of the bureau's Laramie petroleum research center) conjecture about cost reductions resulting from the use of nuclear explosions in the production of oil from shale.

He envisions savings over present shale preparation processes in mining, shale preparation, and retorting the broken shale.

His breakdown of industry's share in the proposed shot: \$383,000 for site selection and preparation, road construction and tunneling (2,000 ft. at \$165/ft.) to place the charge; \$87,000 for post-shot exploration (drilling core holes to establish extent and nature of shale fracture) and laboratory evaluation of oil and gas samples; \$715,000 for post-shot oil-recovery research; \$15,000 to evaluate the project's results.

Probable site for the test is Piceance Creek Basin in Colorado, on either government or privately owned land. The nuclear blast itself will cost about \$1 million—the expense to be borne by AEC.

A form letter will be sent to all industry men who attended last week's meeting. It will seek their reaction to the meeting, probe their interest in a smaller-scale recovery test, and sound out opinion on an industry committee to work with the government in studying the problems that are involved.

The proposed blast, part of the Administration's Project Plowshare won't be arranged overnight. And results would take a long time to evaluate. But the Dallas meeting may have helped set the trigger for a start on a new answer to the long-standing shale-oil problem.

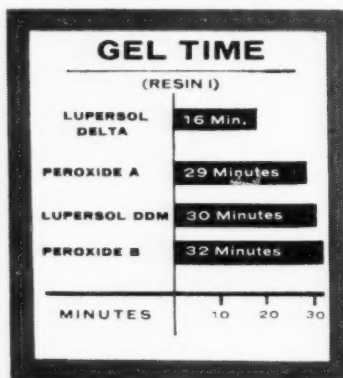


**LUPERSOL DELTA**, having shown its superiority in autobody putty and boat applications, is now available for all polyester work requiring a more active methyl ethyl ketone peroxide hardener.

**ON FIBERGLASS LAY-UP AND GEL-COAT APPLICATIONS**, room temperature tests with all polyester resins show LUPERSOL DELTA up to 50% faster than any other methyl ethyl ketone peroxide — yet it still produces a hard cure. Its use enables high speed production even in cold weather.

**WITH AUTOBODY PUTTY COMPOUNDS**, LUPERSOL DELTA again demonstrates its superiority over other ketone peroxides. Faster gel and sand times are obtained with both singly and doubly accelerated putties. Savings in both time and money result.

Manufactured under rigidly controlled conditions, and batch-tested in a polyester, LUPERSOL DELTA assures uniform catalytic activity — has the same long term storage stability that distinguishes LUPERSOL DDM, the original methyl ethyl ketone peroxide.



Write for Data Sheet



## LUCIDOL DIVISION

WALLACE & TIERNAN INCORPORATED  
Dept. 3, 1740 MILITARY ROAD  
BUFFALO 5, NEW YORK

## RESEARCH

### EXPANSION

- Koppers Co., Inc. (Pittsburgh), will construct a new research center this year on a 176-acre tract near Pittsburgh. Staffers from Verona, Pa., and other locations will be moved as the facilities are completed. Plans are to triple research activities in the next 10 years.

- Atlas Powder Co. (Wilmington) will increase its work on activated carbons at its new, \$500,000 Darco Experimental Laboratory near Marshall, Tex.

- General Electric (Schenectady, N.Y.) will transfer its Lexan polycarbonate resin project to its Chemical Materials Dept. at Pittsfield, Mass.

## PRODUCTS

**Pure Ytterbium:** Nuclear Corp. of America (White Plains, N.Y.) has ytterbium metal, in 99% purity, available in ingots and lump form. Suggested uses: as a semiconductor, in electronic devices, in new alloys.

• **Activated Carbon:** Henley & Co. (New York) has developed an activated carbon claimed to be useful as a catalytic agent in processes where materials that tend to polymerize are present. Called EKT-IV, it contains traces of metallic oxides finely dispersed on the carbon surface.

• **Epoxy Plasticizers:** A new series of epoxy plasticizers, alkyl epoxyhexahydrophthalates, have been developed by Food Machinery and Chemical Corp. (Buffalo, N.Y.). They reportedly have excellent stabilizing properties, are applicable in a wide range of vinyl resin formulations.

• **Thin Metal Foils:** Available from American Silver Co. (Flushing, N.Y.) are a variety of thin foils (0.010-0.00005 in.) in copper, beryllium-copper, gold, lead, nickel, palladium, platinum, tantalum, titanium, zinc and stainless steel. Suggested use: in nuclear applications, for measuring radiation.

• **Electron Acceptor:** A newly developed agent for medical research, called Nitro BT, reportedly an excellent electron acceptor, is available from Dajac Laboratories of Borden Chemical Co. (New York). Chemi-



ically it is 2,2'-di-*p*-nitrophenyl-5,5'-di-phenyl-3,3' - (3,5 - dimethoxy-4,4' - biphenylene) ditetrazolium chloride.

**Oral Ureteral Spasmolytic:** Atratan, atropine tannate, is said to give sustained relief in the treatment of renal colic, eliminating the need for narcotic treatment in most cases. It was developed by Irwin, Neisler & Co. (Decatur, Ill.).

**Chromate Test:** Betz Laboratories' (Philadelphia) new chromate test eliminates use of all liquid reagents except sodium thiosulfate, will detect chromate levels of 10 ppm.

**Analyst's Silicic:** Silicic acid for lipid chromatography is now supplied in standard 100- and 500-gram bottles by Bio-Rad Laboratories (Richmond, Calif.). Price: \$7.50/100 g.; \$140/-2,500 g.

## APPARATUS

**Twenty-Gallon Glass Kettles:** Corning Glass Works (Corning, N.Y.) is offering 20-gal. (Pyrex) glass reaction kettles, reportedly the largest available. The firm claims "this fills the glass reactor-vessel gap between laboratory-scale runs and pilot-plant or full-scale production for pharmaceutical and chemical products." Fittings are also available.

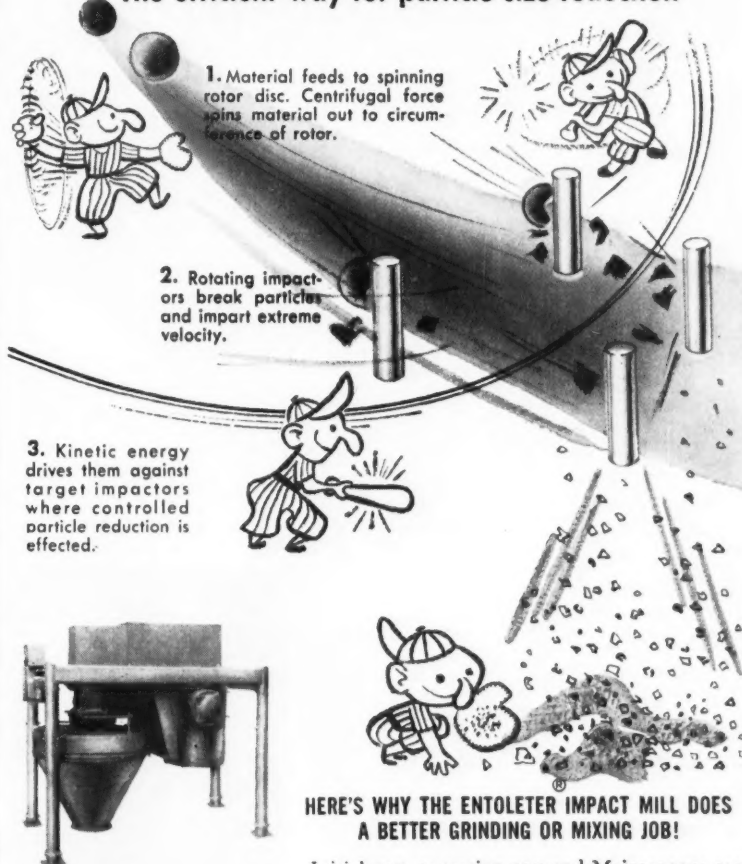
## REPORTS

• "Inventions Wanted by the Armed Forces," just published by the National Inventors Council, lists the following six chemistry problems and discusses reasons why attempts to solve these problems have failed: "New Methods of Making Colored Smokes"; "Growth of Large Single Crystals"; "Quartz Crystal Units"; "Adhesives for Explosives"; "Water-proofing Compounds"; "Metal-to-Metal Adhesives." National Inventors Council, U.S. Dept. of Commerce, Washington 25, D.C., will provide a free copy of the entire report.

• "Fluorine-Ammonia Combustion" (PB 121715, \$1.75), available from the Office of Technical Services, U.S. Dept. of Commerce, Washington 25, D.C., is a report of the results of studies to develop new high-energy rocket propellents.

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Entoleter Centrifugal Machines (Series 27 shown above) handle processing of entire output of Polyethylene Pellets for one of the country's largest producers.  
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## ENTOLETER DIVISION

### SAFETY INDUSTRIES, INC.

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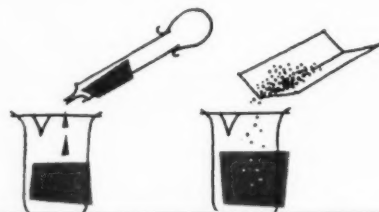
# finding the hard-to-find

A common analytical problem is measuring minute amounts of a compound in a mixture. Ordinary methods of analysis frequently cannot be used because the sought compound is present in such a low concentration or because other substances are present which interfere. Ordinary isotope dilution techniques\* may be impractical because the compound cannot be obtained in radioactive form, or because the isolation step is too difficult.

*For such tough problems the radioisotopic derivative method\*\* is ideal. The chemist simply converts the sought substance into*

*\* See Nuclear-Chicago Technical Bulletin No. 1.*

*\*\* We have prepared a technical description of procedures used in the radioisotopic derivative method as applied in quantitative analysis and will be glad to send you a copy. Ask for Technical Bulletin No. 3.*



1. Form a radioactive derivative of the substance by adding an easily obtained radioactive reagent to the mixture.

2. Add some non-radioactive derivative, chemically identical with the desired derivative.

**For most radioisotope applications, only a minimum of nuclear instrumentation is needed. Here standard Nuclear-Chicago instruments have been assembled to illustrate the simple, inexpensive equipment required to measure beta and gamma radiation. Complete nuclear laboratories for radioactive sample measurements can be purchased for less than \$3,000.**

# is a job for radioisotopes

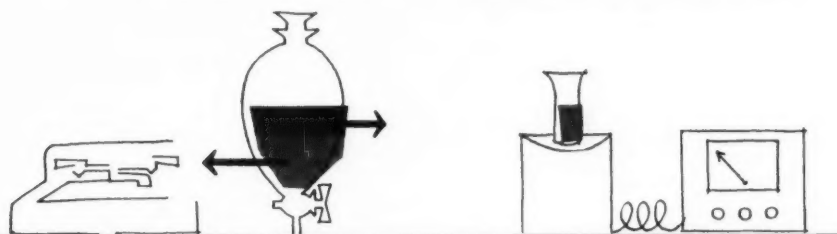
a *radioactive* derivative by reaction with a radioactive reagent which either can be purchased or made readily from commercially available radioactive compounds. A relatively large amount of the same derivative, but *non-radioactive*, is added as carrier and a pure sample is isolated. The carrier greatly simplifies the problem of isolating the derivative. Radioactivity in the isolated sample is compared with the radioactivity in the original radioactive reagent. A simple calculation then yields the amount of sought compound in the original sample. Accurate results are possible where even less than 1 microgram of the sought substance is present.

The radioisotopic derivative method has been used in clinical analysis for such problems as the measurement of histamine in animal tissues and the adrenal hormones in

blood. It is equally applicable in industrial problems where the amount of a substance in a mixture must be determined. The amount of radioactivity needed is generally so small that no red tape or special precautions are necessary.

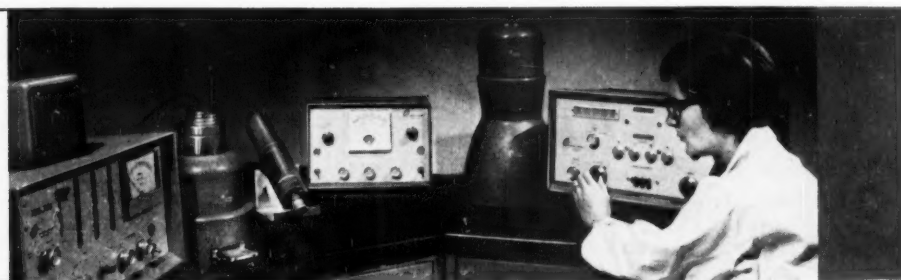
★ ★ ★

Designing and manufacturing high quality, dependable instruments for measuring radioactivity has been our business at Nuclear-Chicago for more than twelve years. We are a leading source for Research Quality Radioactive Reagents, too. From a single instrument to a complete radioisotope laboratory, we can offer you the finest and most practical equipment for your needs. We would be pleased to have you consult us on equipment needed for a progressive program in this field.



3. Isolate the desired derivative. A completely pure state is not required, provided the impurities are not radioactive, and the degree of purity can be assayed by some ordinary means.

4. Measure the radioactivity in the isolated sample and compare with the radioactivity of original reagent.



*Fine Instruments - Research Quality Radiochemicals*



**nuclear-chicago**  
CORPORATION

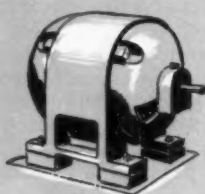
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# *Phosphorus pentasulphide helps inhibit oxidation and corrosion in light and heavy-duty lubricants*

Oxidation and corrosion inhibitors are derived from the action of phosphorus pentasulphide on unsaturated organic compounds or on high molecular-weight alcohols, which form a metal salt. These compounds may be the only additives present in light-duty crankcase oils. Along with other additives, they are used in heavier-duty oils.

When it is desired to use a primary and secondary inhibitor in the same oil, complex amines are mixed with the reaction products of phosphorus pentasulphide-polybutene. The mixture serves as anti-oxidant and corrosion inhibitor.

(Source: The Petroleum Engineer, March, 1956, article by C. J. Boner, "Addition Agents for Lubricants.")



## **AA Quality Chemicals**

WIDELY used by leading petroleum companies in making oxidation and corrosion inhibitors for lubricants, AA Quality Phosphorus Pentasulphide assures highest standards of quality and uniformity. It is made under rigid quality control from 99.9% pure Elemental Phosphorus . . . a product of our

own electro-thermal process plant and our own ample reserves of phosphate rock.

If our Research Department can be helpful to you in problems concerning phosphorus pentasulphide or any of the other AA Quality organic or inorganic phosphates, please write on your company letterhead for information.

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50% Pure Food Grade  
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All grades Florida Pebble Phosphate Rock  
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Complete Fertilizers  
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### **OTHER AA QUALITY PRODUCTS**

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Magnesium Fluoride

#### **GELATIN**

KEYSTONE® Gelatin: Edible, Photographic  
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Animal Bone Charcoal  
Bone Black Pigment (COSMIC® BLACKS)  
Bone Ash  
Bone Oil  
Keystone Ammonium Carbonate  
Sulphuric Acid



# Technology Newsletter

CHEMICAL WEEK  
January 17, 1959

**A shale-oil recovery blast bigger than the 10-kiloton nuclear test** shot proposed at last week's meeting between the Bureau of Mines, AEC and industry men in Dallas (*see also p. 63*) is already under consideration. Walter I. R. Murphy, chief, branch of oil-shale research of the Bureau of Mines, points out that AEC figures show that the bigger the blast yield in kilotons, the smaller the cost per unit of energy. Thus, other things being equal, the bigger the job, the more likely the nuclear explosive can do it economically. He estimates that, whereas about 300,000 tons of broken shale might be produced by a 10-kiloton shot, about 35 million tons might result from a 300-kiloton blast.

This is only a rough guess, Murphy admits. Both AEC and Bureau of Mines experts stress that figures used to show the probable results of an explosion in shale are only extrapolations of the results of Project Plowshare experiment Rainier (made in Sept. '57), in which about 200,000 tons of permeable volcanic rock was produced by a 1.7-kiloton shot. In order to evaluate the A-blast technique in oil-shale accurately, an actual test in shale will be necessary.

•  
**A desiccant (silica aerogel) insecticide scored well** against dry-wood termites in recent Florida field tests. F. Gray Butcher, research entomologist of Perrine, Fla., tried Davison Chemical's Dri-Die Insecticide 67 (*CW*, Oct. 25, '58, p. 92) on Florida termites (a species different from the California termites previously found vulnerable), reports it provides effective protection for wooden structures.

•  
**A low-cost device that warns of presence of radioactive fallout** has been developed by Tracerlab, Inc. (Waltham, Mass.). Called the Banshee, it is basically an ionization chamber that can be inserted between a tube and its socket in either a radio or television set. It's expected to retail for about \$5.

•  
**A new airport paving material that resists abuse of jet aircraft** traffic (*CW Target*, Feb. 21, '53, p. 24) has been developed by Shell Oil. It combines petroleum asphalt, petroleum-derived epoxy resins and a plasticizer. Shell engineers report that a ½-in. overlay of the new plastic pavement withstands both the searing blasts of jet engine exhausts and the solvent action of spilled jet fuel, gasoline, hydraulic fluids and cleaners.

The first commercial application of the material, at United Air Lines' jet maintenance base (San Francisco International Airport), has demonstrated its ability to withstand the tremendous weight of new super-bombers and passenger planes.

Highway resurfacing is a tantalizing possible future application. Shell thinks the material's wear-resistance makes it a natural for this

## Technology

### Newsletter

(Continued)

job. It can be formulated in standard hot-mix asphalt plants, applied with conventional paving machines and rollers. Cost would be about 10% higher than that of regular asphaltic concrete.

•  
**A new drug for treatment of alcoholism** was placed on the Canadian market this week by Llederle Division of Cyanamid of Canada (Montreal, Que.). It's a calcium carbimide derivative, tradenamed Temposil. Extensive testing by the Alcoholism Research Foundation and the Bell Clinic of Toronto indicate that it is more easily tolerated, has fewer side-effects than other preparations of this type. Temposil is not being made available in the U. S. at this time.

•  
**Latest push for saline-water conversion** (see also p. 39) is an agreement for mutual aid and exchange of information between the U. S. Interior Dept. and New Mexico. The state has offered several potential sites for a brackish-water conversion project, hopes to get one of the five demonstration plants authorized by Congress last year.

New Mexico is the second state to enter into such an agreement with the federal government. California has a similar arrangement covering feasibility studies of a \$100,000 nuclear-powered sea-water conversion plant by The Fluor Corp. at Whittier, Calif. (*CW Washington Newsletter*, July 26, '58).

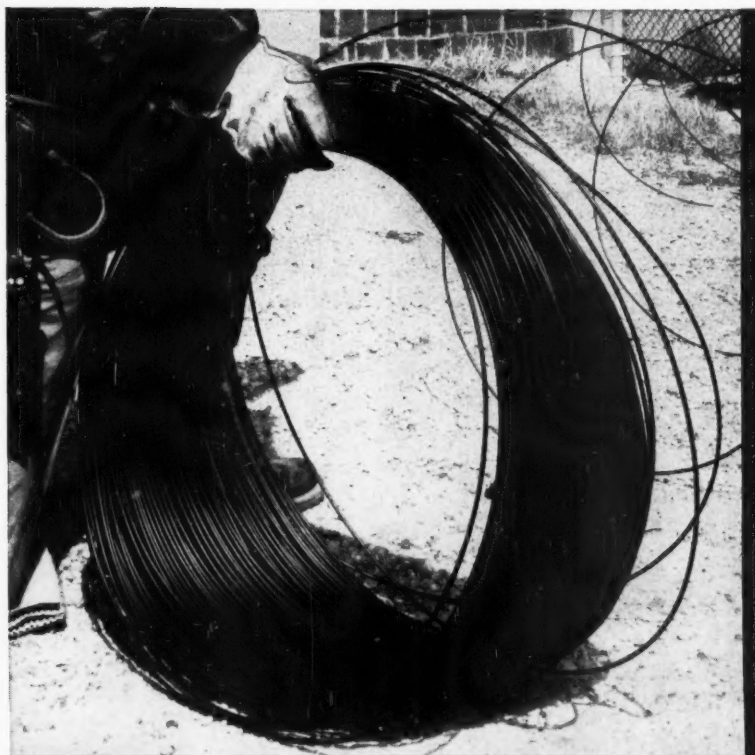
•  
**A new, cheaper route to either hydrochloric or hydrobromic acid** is described in a preliminary German patent (DAS 1 035 626) awarded to Badische Anilin- & Soda-Fabrik (Ludwigshafen). According to the patent, a complete HCl plant can be contained in a single tower lined with graphite based, corrosion-resistant material. Hydrogen and chlorine are burned in a bell-shaped reaction chamber at the base of the tower, HCL gas escapes through slits in the chamber and passes into absorbent, noncorroding packing at the top of the tower. Water or dilute acid trickles over the packing and drips down, cooling both burning chamber and tower walls. It is collected as concentrated acid.

•  
**A new patent points the way to improved food and cosmetic products.** It's U. S. Patent 2,865,589, issued to New York City physician Irwin I. Lubowe. Key: use of isopropyl, ethyl, methyl and butyl esters of saturated and unsaturated fatty acids to increase the solubility of mineral, vegetable and animal oils in low-molecular-weight alcohols. The fatty-acid esters most frequently used—*isopropyl palmitate, methyl myristate and linoleate, ethyl palmitate and myristate*—are claimed to be nontoxic, emollient and skin-penetrating.

For example, the method is suggested for adding larger amounts of nutritive vegetable oils to ethanol for feeding aged and postoperative patients. It is also useful in boosting the effectiveness of cosmetic-type (e.g., antidandruff) lotions.

# NOW

## there's a new standard of toughness for plastic wire and cable insulation!



A new type of polyethylene plastic has been developed, which when used as cable insulation provides the excellent electrical properties of regular polyethylene, plus a toughness and abrasion resistance superior to almost any other plastic or rubber.

Hercules makes this new high density polyethylene, under the trade name Hi-fax, in a special grade designed for use in wire and cable. It is now available in tree wire, where a one-shot insulation of Hi-fax outperforms other types of heavy duty tree wire made with a protective sheath of nylon or varnish impregnated braid. Hi-fax serves equally well in service drop cable and insulated aerial cable, where outstanding abrasion resistance and mechanical cut-through resistance are needed.

Hi-fax cable can cut your installation and maintenance costs, and, at the same time, improve your power distribution system. Contact your present cable supplier for further information.

### HOW HI-FAX COMPARES WITH OTHER INSULATIONS

	Hi-fax High Density Polyethylene	Conventional Polyethylene	Neoprene	PVC
Abrasion resistance.....	excellent	good	fair	good
Chemical resistance.....	excellent	very good	very good	very good
Cold bend.....	very good	very good	very good	fair
Corona resistance.....	fair	fair	poor	excellent
Dielectric strength.....	excellent	excellent	good	excellent
Environmental stress cracking.....	good	marginal	—	excellent
Flame resistance.....	poor	poor	very good	very good
Heat distortion temperature.....	good	poor	very good	good
Heat softening point.....	good	poor	very good	good
Insulation resistance.....	excellent	excellent	poor	good
Moisture resistance.....	excellent	excellent	fair	excellent
Oil resistance.....	excellent	good	excellent	good
Ozone resistance.....	very good	very good	good	excellent
Power factor.....	excellent	excellent	poor	poor
S I C.....	excellent	excellent	poor	fair

Hercules Powder Company does not manufacture insulated wire and cable, but supplies Hi-fax high density polyethylene in resin form to wire and cable producers.

*Mail this coupon for a  
free copy of our new booklet*

Cellulose Products Department  
HERCULES POWDER COMPANY  
900 Market Street  
Wilmington 99, Delaware

Please send me a copy of your  
new folder, "Facts You Should Know  
About Polyethylene Wire Coatings."

NAME

COMPANY

ADDRESS

CITY  STATE



Cellulose Products Department  
**HERCULES POWDER COMPANY**

900 Market Street, Wilmington 99, Delaware



Fuller Airveyor unloads wood flour to two forty-five foot silos. Second Airveyor system reclaims material 360 feet to processing.

## **General Electric Changes From Bags to Airveyor ... Cuts Handling Costs 60%**

As part of a program to increase plastics production and reduce operating costs at its Pittsfield, Mass. plant, General Electric Company called in Fuller engineers to design systems for handling wood flour in bulk.

Wood flour—used as a filler in phenolic molding compounds—was being handled in 75 and 100-pound bags. Unloading one carload of bags required 16 manhours. Bags were loaded on dollies and wheeled to a distant elevator.

**SAFETY FIRST**—The two pneumatic Airveyor® materials handling systems, engineered and manufactured by Fuller Company, were installed by its parent company, General American Transportation Corp., providing undivided responsibility. This installation resulted in a 60% saving in handling costs! The two systems

are handled by one full-time and one part-time operator. Manhours to unload one car have been reduced from sixteen to six!

In addition, all equipment is designed to conform to strict safety specifications set down by G-E engineers.

**FLOW YOUR MATERIALS**—The Airveyor is a system that flows your material through sealed pipes. It's fast, safe, and self-contained. The pipes can be placed close to ceilings, run underground or through walls.

Whether you process wood flour—or other dry granular materials—look into the many economies of Airveyor conveying. Write today for interesting, detailed literature on Airveyor and other Fuller pneumatic materials handling systems.



### **FULLER COMPANY**

**144 Bridge St., Catasauqua, Pa.**

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Birmingham • Chicago • Kansas City • Los Angeles • New York • San Francisco • Seattle

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*"See Chemical Engineering Catalog for details and specifications".*



# PRODUCTION



## SCRAPPING

Crane swings unsalvageable material into car for rail shipment to buyer.



## DISMANTLING

Blowtorch cuts used fittings apart before their cleaning.



## INSPECTING

Valves are inspected, sorted into lots for repair or scrap.

## Salvaging Used Equipment for More Dollars

Pictured above is an operation that returns Dow Chemical's Midland Division nearly \$1 million each year. The operation is equipment salvage—and the success of Dow and others in making equipment reclamation pay off handsomely is a major reason why

process companies large and small are taking new interest in salvage.

Indicative of the burgeoning interest in reclaiming equipment: the informal meeting last week in New York City of salvage engineers from the Middle-Atlantic area engaged in

many phases of manufacturing. The group, brought together largely through the efforts of Du Pont's Luther Broadway, comprises the foremost proponents of vigorous salvage programs.

In charge of programs dealing with



## METASAP METALLIC SOAPS FOR RESEARCH AND INDUSTRY

Whatever your industry, whatever your need in stearates, you will fill them best—fill them fast—through Metasap. Write for full information about our full line of metallic soaps. Our Technical Service Department will gladly make recommendations based upon your specific requests. Metasap Chemical Company, Harrison, N.J.



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## PRODUCTION

thousands of dollars worth of equipment each year, these experts are seeking ways to streamline programs that have been evolved largely through trial and error. Already, however, they've demonstrated the dollar benefits of formalized salvage programs. And, though most of these operations have been large-scale ones, they can provide helpful tips for many smaller process companies.

**Books in the Black:** Precise figures from Du Pont and Dow show just how much well-managed equipment salvage programs can return: Du Pont's Salvage and Reclamation division disposed of about \$4.5 million in materials in '57, slightly less than \$4 million in '58. About 16% of the '57 total and about 26% of the '58 total were machinery and process equipment; the remaining percentages were items like containers, chemical waste and residues, surplus construction and plant-stores materials, and scrap.

Dow's Midland Division estimates returns from salvage of surplus equipment at about \$975,000 per year. Equipment worth about \$415,000 is reused at Midland, Mich., yearly, and \$80,000 in surplus equipment is sent out to other Dow plants for use. Drums and Fiberpaks worth about \$183,000 and copper worth about \$24,000 are reused at Midland. About \$273,000 in scrap is sold.

And, of course, profitable salvage operations aren't restricted to members of the group. For example, Standard Oil Co. of California estimates that the replacement value of reusable materials salvaged at its Richmond, Taft, La Habra and El Segundo locations was \$4.8 million in '57. And sale of scrap and other unusables amounted to over \$500,000.

**Cost of Going Formal:** These companies with formal programs can prove that the cost of such a program—often criticized—is more than offset by returns. Dow, for example, estimates the total operating cost of its Midland operation (which includes 14 acres for sand-blasting and salvage, four buildings for offices and storage, and a staff of 32) is about \$260,000/year—one-quarter of its savings.

Union Carbide Chemicals estimates that the yearly storage cost of the surplus equipment is 35% of its market value. For that reason, the department won't hold equipment longer than three years.

Last fall, Socal spent \$200,000 on a modern 15-acre reclaiming facility at Richmond. The plant is staffed by 36 men, replaces a 1-acre, 20-year-old operation. Its reason for the move: the savings in process downtime, which, it says, are more important than dollar figures on reusable materials.

"The savings in shutdown time is a not-often-understood goal of reclaimation," says Hardy Klarquist, manager of the purchase and stores department. Socal's reclaiming staff has developed many tools for handling its specialized problems. And, during shutdowns, repairs on unusual equipment can be handled easily and quickly with the special devices.

**Shops Aren't Always Needed:** The big salvage layouts are not always necessary to make a formal salvage plan effective. In fact, there are few companies that have them. As Monsanto's Director of Engineering, John Hayes, puts it: "A reconditioning shop can only be justified at very large plants. Here, we don't feel the return is worth the effort."

But, adds Hayes: "To have some-one merely catalog surplus items for possible use elsewhere in the company or for outside sale would be worthwhile for a company many times smaller than Monsanto."

In fact, company size isn't significant when the matter of records on surplus equipment is brought up. Much of Du Pont's success is based on careful inventorying. It has no special reconditioning shop. But its S&R division controls and coordinates salvage activities with a formal program. Here's how it works:

Once a plant decides to dispose of a piece of equipment, it lists the item in a "superfluous machinery account." A card describing the equipment is filled out and forwarded to S&R.

In addition to the description, the card lists such items as defects, estimated cost of reconditioning, former use, purchase date, reason for abandonment, cost, estimated resale tag, spare parts, and whether any patent rights or know-how are involved.

S&R screens the cards, determines whether the equipment might be used elsewhere in the company. Equipment of potential interest is listed on a monthly "broadcast" that is circulated in the company. Items that have no further company use are listed in an

THE MAN WITH THE



MULTIWALL PLAN



**UNION  
PACKAGING SPECIALIST  
DON DEININGER**

**saves  
Multiwall  
user  
\$8 per M  
through  
specifications  
review**

A Chemical Company, already using 43 different sizes and types of Multiwalls, planned to add new products to its line. Union Packaging Specialist Don Deininger recommended a simplification of Multiwall specifications and inventory. Union prepared a Specifications Manual for the manufacturer, also simplified, unified and modernized his bag designs.

Results: user reported: (1) Union's recommendations for re-designing bag sizes and constructions in some instances saved as much as \$8 per M.

(2) The new Specifications book enabled the customer to order bags more easily and accurately. It also simplified his inventory control.

(3) The new designs established a visual relationship between his family of products, enabled his sales force to do a better merchandising job.

This is a typical example of Union's 5-Point Multiwall Plan in action. Perhaps it can produce gains in your own Multiwall packaging operation. Write for additional information.

**Union Multiwall Recommendations  
are based on this 5-point  
Packaging Efficiency Plan**



- DESIGN
- EQUIPMENT
- CONSTRUCTION
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- PLANT SURVEY

**Better Multiwall performance  
through better  
planning**



UNION'S PACKAGE ENGINEERING DEPARTMENT will study your Multiwall bagging methods and equipment and make appropriate recommendations, regardless of the brand of Multiwalls you are now using.

**UNION MULTIWALL BAGS**

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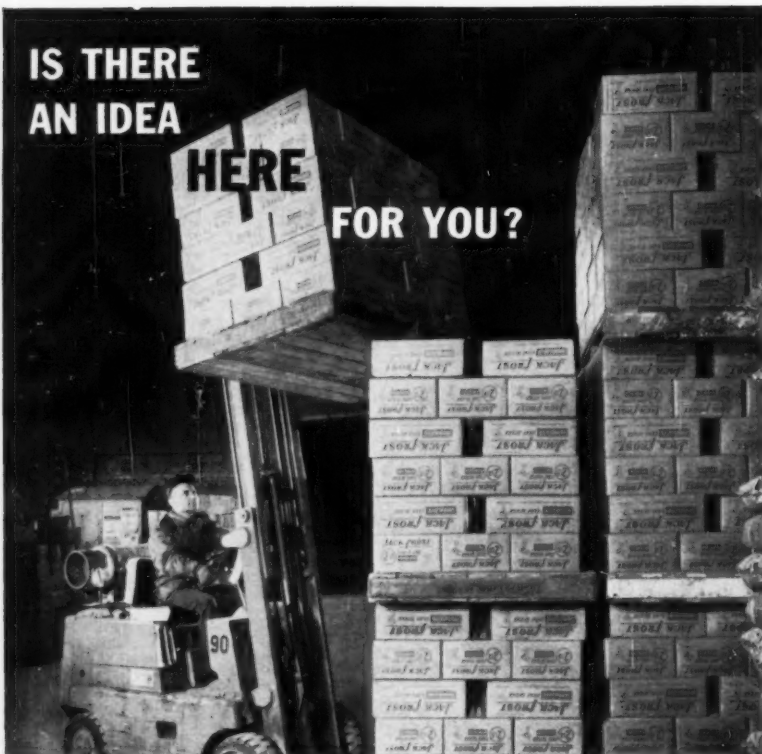
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FOR YOU?



**CARTONS** treated for slip resistance with "Ludox" are easier and safer to ship and store... permit mechanized handling that cuts costs.

## DU PONT LUDOX® colloidal silica increases surface friction... improves bonding properties

What can you do with an aqueous sol of colloidal silica—particle size 15 millimicrons—that dries into insoluble silica films?

Some chemists find "Ludox" useful in increasing the surface friction and slip resistance of fibers, paper, and other substrates. It forms strongly adherent films on the surfaces... is so finely divided there is no perceptible change in surface appearance.

Others use "Ludox" as a binder for high temperature fiber insulation materials, because the surface-active particles of "Ludox" bond well to aluminum silicate and other glass fibers... provide excellent thermal resistance.

Still others add "Ludox" to water-soluble or dispersible organic polymers such as sizes, binders and rubber. The great surface area of the many small particles provides reinforcing action contributing to hardness, stiffness, adhesiveness, and wet abrasion resistance.

Your use for Du Pont "Ludox" may be one of these, or a new profitable use tailored to your own needs. Be sure to evaluate "Ludox" in terms of your own development work! Just write address given below for more information.



**PHOTOMICROGRAPH** (50,000 x) shows discrete particles of "Ludox". Each particle is a clear, hard, transparent sphere. Surface area is approximately 210 sq. meters per gram.



BETTER THINGS FOR BETTER LIVING... THROUGH CHEMISTRY

► Write now for this free 20-page booklet describing the properties and uses of "Ludox".  
E. I. du Pont de Nemours & Co. (Inc.), Grasselli  
Chemicals Dept., N-2533, Wilmington 98, Del.



## PRODUCTION

"offering," which is sent out about every month to used-equipment dealers, other interested companies.

**Spreading the News:** One chemical company, for example, says it receives about five or six used-equipment lists each week. Only about one in 20 comes from another chemical company, the rest from dealers. "Naturally we prefer the ones from other chemical companies. It's like buying a used car—it's always better when you know who the former owner was. You can better tell what kind of treatment the equipment got—and it is usually easier on the pocketbook when you cut out the middleman," the company says.

Union Carbide Chemicals' procedure is for the surplus-control department to list a piece of equipment after reconditioning, send the list to each of the seven plants of the Chemicals Co. After six months, other Union Carbide divisions are notified. Then, if the item is still not claimed after six months, the department decides whether to hold it for another year, sell it as used equipment or scrap, or give it to a worthy group.

**\$100 Catalog:** At Midland, Dow's salvage catalog is published each month at a cost of about \$112, and 400 copies distributed within the plant and to other plants. A typical catalog (for Nov. '58 issue) contained 67 pages of equipment items. A four-man committee, headed by Jim Stevens of the engineering department, and including representatives from purchasing, plant shops, operating departments, meets each week to discuss salvage policy and the disposal of items not used in the company.

**Reuse or Sell:** An engineer at one large chemical firm says that most equipment is seldom worth salvaging for use within the company. For one thing, it is "only sheer luck" that a piece of used equipment will fit a design need. And if it will fit in, it is generally unreliable—the weak link that causes most production difficulties. The exception: equipment that hasn't actually been used because of modifications or cancellations in new construction.

Nonetheless, the dollar figures of some companies offer strong evidence that reused equipment can produce savings. And, they generally show that it takes a formal program to realize full potential of a salvage operation.



# SAFE!

**General American  
terminal keeps  
alcohol under  
“lock and key”!**

Ethyl alcohol is a “problem” liquid when it comes to storage because close Federal tax supervision holds producers accountable for every gallon. A major producer who stores alcohol in General American’s Carteret terminal doesn’t have this problem—General American assumes it for him.

In addition to storage, the terminal provides a variety of services—metering, blending, diluting, denaturing and packaging—all provided with the necessary accountability and accuracy that solves a difficult marketing problem.

If you have a storage problem involving hard-to-handle liquids, call on General American. Leased terminal facilities give you the privacy, safety, flexibility and service of your own terminal—*without capital investment on your part*. Phone or write today. You’ll find . . . *it pays to plan with General American.*



Six terminals at five key-market locations with over 14,000,000 barrels capacity: PORT OF NEW YORK (Carteret, N. J.), PORT OF NEW ORLEANS (Good Hope, La.), CHICAGO, ILLINOIS (Bedford Park), PORT OF HOUSTON (Galena Park and Pasadena, Texas), CORPUS CHRISTI, TEXAS.



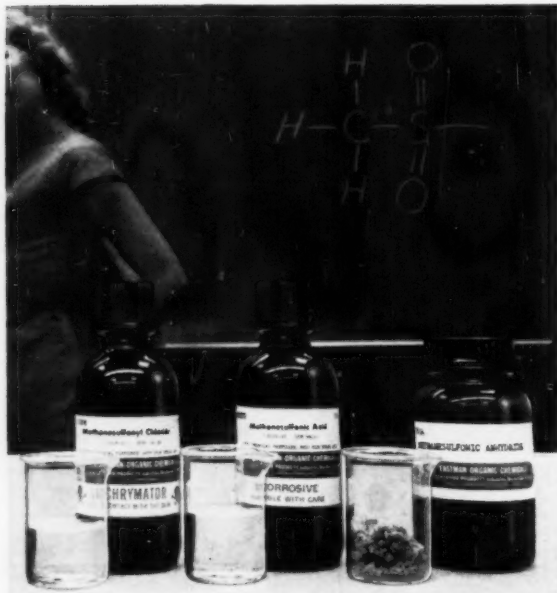
## **GENERAL AMERICAN TANK STORAGE TERMINALS**

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...AMONG SOME

3700

ORGANICS



### Block for sale

Asked what virtues the methanesulfonyl group possesses, we would venture some non-committal comparison with the toluenesulfonyl group as a temporary protectant to block a reactive spot on a molecule while some other part was being worked on. We might mumble that the lower molecular weight and higher solubility in water of methanesulfonyl offer an efficiency advantage over toluenesulfonyl for such an operation. If we had any thoughts about extending the concept to modifying toxic and allergenic properties by means of methanesulfonyl groups, we would keep our thoughts to ourselves.

Ducking the issue of the ends of methanesulfonation, we would quickly pass along to the means thereof.

In tonnage commerce, the methanesulfonyl group was once obtainable as the sodium salt, which does not readily yield the more tractable *Methanesulfonyl Chloride*. This acid chloride we are pleased to offer as Eastman 5388 at \$2.30 for 100 grams, a price which may well fall when and if it ever enters the commodity market. *Methanesulfonic Acid* once was likewise a commodity, but when last we inquired of a petrochemical company that produced it we were told we would have to buy 20,000 pounds to justify their setting up for it again. We have made other arrangements by which we offer it as Eastman 6320 at \$2 for 25 grams. (In Practical Grade as Eastman P6320, it's only \$6.75 for 500 grams.)

And now we have something much stronger for carrying on methanesulfonation without liberating hydrochloric acid all

over the field of action—*Methanesulfonyl Anhydride*, Eastman 7654, packing not one but *two* methanesulfonyl groups to the molecule. The customer for whom we first made it took not 20,000 pounds but 25 grams. We would supply as much to anybody else with \$7 to spend. That's the difference between our situation and that of the petrochemical company.

### PAN-PAR

We have been counting on a man who needs a reagent for copper and zinc to go unerringly to our catalog and look up *o*-{2-[ $\alpha$ -(2-Hydroxy-5-sulphophenylazo)benzylidene]hydrazino}benzoic Acid Sodium Salt (Eastman 7199) in the alphabetical listing. To work like that, a man needs to be very smart in an over-specialized sort of way. By neglecting to list this compound under its trivial name Zincon (zinc and copper, get it?) we haven't shown much brilliance ourselves. Our devotion to *Chemical Abstracts* nomenclature is commendable, justifiable, and sometimes fatuously self-sacrificing. We are holier than most chemical houses. Why, we know of some producers of dyestuffs very useful in the laboratory who *refuse* orders written in the systematic nomenclature, much less encourage them!

Between trademarks—which specify only commercial origin for merchandise otherwise named as to kind—and systematic but pedantic chemical names lies the convenient middle ground of trivial names (trivial: three roads, i.e., the fork where the people meet to chat, get that?). Some are trademarks abandoned by their owners, some are pronounceable combinations of letters from the systematic name, some are little slogans concocted by enthusiastic chemists who discovered the uses.

We keep a private book which lists all sorts of different names for our 3700-odd compounds. It has suddenly struck us that a small distillation from this book, comprising a few of the names neither cross-referenced in our catalog nor familiar to everybody gabbing at the crossroads, should be put in the hands of every chemist interested enough to ask. Sample entries:

**PAN**—1-(2-Pyridylazo)-2-naphthol (Eastman 7192)

**PAR**—4-(2-Pyridylazo)resorcinol (Eastman 7714)

**Tiron**—4,5-Dihydroxy-m-benzenedisulfonic Acid Disodium Salt (Eastman 7062), reagent for titanium and iron (also called sodium catecholdisulfonate)

**Thoron**—*o*-(2-Hydroxy-3,6-disulfo-1-naphthylazo)benzenearsonic Acid Disodium Salt (Eastman 6748), (reagent for thorium)

**TOPO**—Tri-n-octylphosphine Oxide (Eastman 7440)

**Pyrocatechin Violet**—

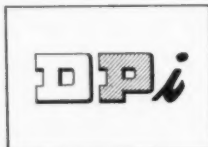
Pyrocatecholsulfonephthalein (Eastman 7589)

**Tetrazolium Chloride**—

2,3,5-Triphenyl-2H-tetrazolium Chloride (Eastman 6533)

Handy little reference when transcribing notes from a cocktail napkin.

You get a copy from *Distillation Products Industries*, Eastman Organic Chemicals Department, Rochester 3, N. Y. To use it the way we want you to, you *must* also have a copy of Eastman Organic Chemicals, List No. 41, which gives the prices and package sizes for *all* the 3700 organics we stock.



**Eastman Organic Chemicals**

Also... vitamins A and E in bulk... distilled monoglycerides

**Distillation Products Industries** is a division of **Eastman Kodak Company**

# Market Newsletter

CHEMICAL WEEK  
January 17, 1959

**The pricing picture on high-density polyethylene is clearing up** after last week's maneuvers. By now the old "base price" of 43¢/lb. has been generally sliced a full 5¢ (to 38¢/lb.), by most producers.

Kickoff was Phillips Chemical's quiet notification to its salesmen to start quoting the lower price. (Lack of immediate public announcement is attributed, by some observers, to an attempt by Phillips to steal a competitive march, but Phillips tells *CW* that the reduction was made "to meet competitive conditions.")

Within hours, word of the price-cutting deal was known to all polyethylene producers. There was, however, some hesitation in following Phillips' suit until other makers (including Hercules, Carbide, Grace, Celanese, and Koppers) were able to obtain more definite confirmation of the cut—the second slash in less than a year. Result of the short-lived split price and speculation on sellers' actions: customer confusion.

Actually, the current situation has overtones of the high-density pricing muddle of early last year (*CW Market Newsletter*, March 1, '58), when Phillips offered consumers a schedule of "discounts" on a quantity shipment basis. The industry rejected the pricing system as "too complicated," then followed Hercules in making the straight-across-the-board 4¢/lb. reduction that established the 43¢/lb. tag that held until last week.

•  
**Polypropylene prices are down an impressive 7¢/lb.** as *CW* goes to press. The move, initiated by Hercules Powder—first U. S. polypropylene producer—confirms trade talk that such action was likely following the high-density polyethylene reduction. The materials are competitive in some applications, and sellers have tried to maintain a differential in tags. The new cut—third in about 13 months—brings Hercules' natural molding powder down to 42¢/lb., and colored powders to 51¢, underscores the company's resolve to broaden markets.

•  
**Long-term cellophane sales won't sag** below the 400-million-lbs./year record set in '58. And more capacity will be needed to meet growing demand despite current U.S. overcapacity. That was the gist of a cellophane industry "progress" report by top producer Du Pont in New York early last week.

At present, cellophane accounts for some 25% of the total 1.5-billion-lbs./year flexible packaging material market as against leading contender polyethylene's 10%. Du Pont officials estimate that by '68, new cellophane types will have helped push sales up about 38% above present production.

The Wilmington firm also disclosed that its new, 50-million-lbs./year plant at Tecumseh, Kan., is now producing commercially, although full-scale operation is still a year off. The installation, incidentally,

## Market Newsletter

(Continued)

boosts total U.S. cellophane capacity to an estimated 550 million lbs., follows American Viscose's '58 opening of a major plant at Marcus Hook, Pa., that will soon be producing cellophane at its rated capacity of 50 million lbs./year.

**Fluorocarbon resin users will get a healthy price break** Feb. 7 when Du Pont posts 8-10% reductions on all grades of its Teflon. Truckload tags on granular molding powders will be chopped 40¢/lb.; aqueous dispersions, 45¢/lb.; and extrusion powders, 80¢/lb. Typical of the new prices are: Teflon 1 at \$4.10/lb.; Teflon 30, \$5.15; and Teflon 6, \$6.65/lb. The company attributes the cuts to manufacturing improvements.

Another development of interest to industrial resin consumers, though not yet generally known, is that Du Pont's new FEP (fluorinated ethylene propylene) plant, which was slated to be built at Parkersburg, W. Va., in '60, will start commercial production later this year.

**Confirmation that '58 was no boom year for glycerine makers** comes in a year-end report by the Assn. of American Soap and Glycerine Producers. Consumption last year is estimated at 220 million lbs., some 23 million lbs. under the previous year's mark.

**But the glycerine outlook appears brighter.** Demand for it as a humectant and plasticizer in cellophane manufacture, tobacco and toilet goods, reports the group, has kept pace with growing markets for these items.

Consumers are concerned about a shortage of crude glycerine in the U.S., intensified by nonavailability of imported materials.

One result of the supply pinch: saponification and soap-lye crude, nominally pegged at 18¾¢ and 17½¢/lb., respectively, are being quoted at considerably higher prices by sellers. Direct users, however, are reportedly resisting.

Some observers believe that more crude would be sold if prices of refined material were hiked, but chances of this happening in the near future seem remote. Business hasn't been good enough to warrant an increase; and even if it were, competition between refiners and synthetic producers is still keen enough to keep prices on an even keel.

### SELECTED PRICE CHANGES — WEEK ENDING JANUARY 12, 1959

	Change	New Price
<b>UP</b>		
Stannic chloride .....	\$0.013	\$0.798
Stannic oxide .....	0.015	1.06
Tankage, Chicago, unit-ton .....	0.25	8.25
<b>DOWN</b>		
Mercury, per flk. ....	2.00	218.00
Tallow, inedible .....	0.00125	0.07625

All prices per pound unless quantity is stated.





Symbolized here is the uncontrolled (multi-point and premature) surface ignition on hot engine deposits that results in abnormal pressure rise and engine noise in some high-compression automobile engines. Driving conditions breed a problem too. Start-and-stop driving that builds excessive deposits is prime offender.

## ATTACK ON A NEW KIND OF ENGINE KNOCK...

Celanese compounds modify engine deposits, improve combustion, reduce noise

Two great industries face a real problem in uncontrolled combustion—which results in a rumbling vibration in the higher compression engines of some of today's automobiles. This new kind of engine knock not only disturbs car owners—it puts limits on compression ratios, gasoline composition, and potential engine efficiency.

Among fuel additives researched to combat abnormal combustion, only the organo-phosphorus compounds have been able to help; they modify the composition of hot engine deposits, thus control surface ignition, and reduce excessive pressure and engine "screaming."

Since the first phosphorus additives were introduced into motor fuels a few years ago, Celanese has been a leading supplier to a growing number of gasoline refiners. And indeed, phosphates—which we have been producing for 35 years—are only one member of a huge family of Celanese chemicals basic not only to the automotive and petroleum industries but to scores of others as well.

Whatever you produce, whatever your problem, perhaps there is some way in which we can serve you, too. Celanese Corporation of America, Chemical Division, Dept. 652-A, 180 Madison Ave., N.Y. 16.

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Esters	Oxides	Vinyl Monomers



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• Canadian Affiliate: Canadian Chemical Company Limited, Montreal, Toronto, Vancouver

# MARKETS

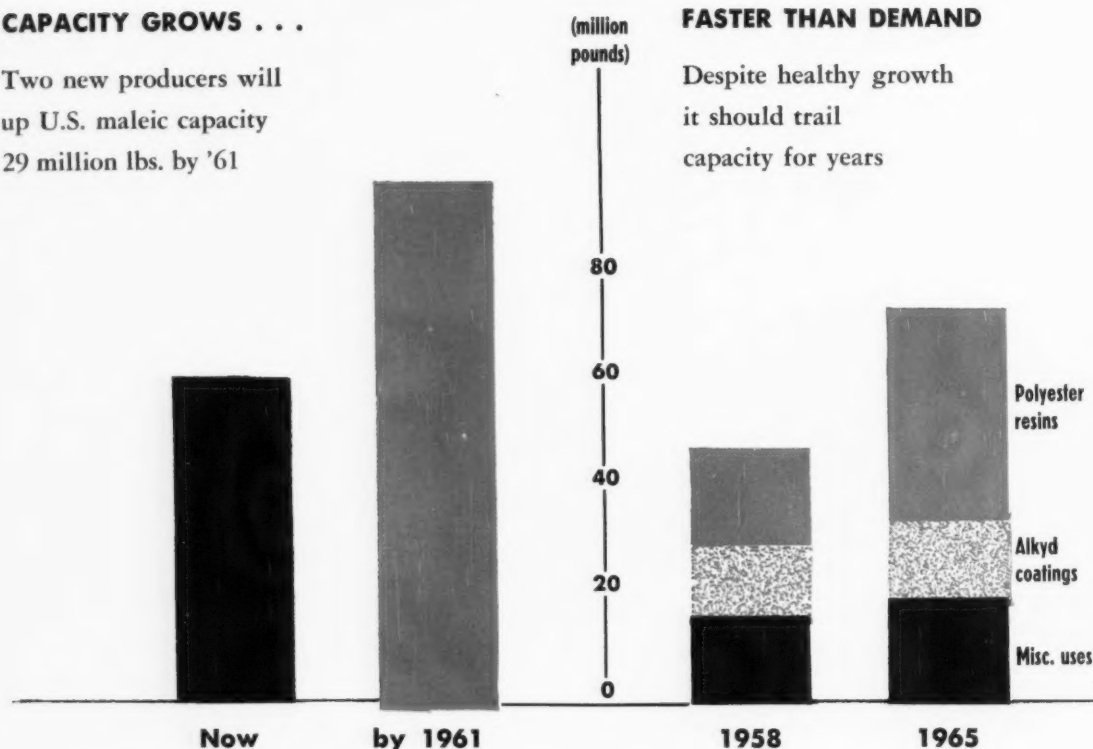
## U.S. Maleic Anhydride

### CAPACITY GROWS . . .

Two new producers will  
up U.S. maleic capacity  
29 million lbs. by '61

### FASTER THAN DEMAND

Despite healthy growth  
it should trail  
capacity for years



## High Optimism Colors Maleic Market

Competition between U.S. maleic anhydride makers will get rougher in the years ahead. Two new plants will boost total U.S. maleic capacity 29 million lbs. to about 90 million lbs. by '61. But estimates put demand at 60 million lbs. in '61 and 75 million in '65.

In the next few weeks, Pittsburgh Coke & Chemical will probably reveal plans to build a 15-million-lbs./year maleic anhydride plant at Neville Island, Pa. Construction will likely start in mid-'59, be completed in late '60.

The move would strengthen PC&C's position as basic producer and supplier of raw materials for the plastics industry. It ties in with the company's just-completed, 2-million-lbs./year fumaric acid plant at the same site (*CW*, Nov. 15, '58, p. 97).

American Cyanamid, another new-

comer, is already building a 14-million-lbs./year plant at Bridgeville, Pa., expects to complete it in late '59. Output will probably be for captive consumption. Cyanamid now buys maleic from other producers.

There are now three established maleic producers. Largest is Monsanto, whose capacity at St. Louis, Mo., is estimated at 34-35 million lbs. (a figure Monsanto neither confirms nor denies).

Next-largest is Allied's National Aniline Division, whose plants at Moundsville, W. Va., and Buffalo, N.Y. have a total capacity of 20 million lbs./year. Smallest producer is Reichhold Chemicals, with 6-million-lbs./year capacity at Elizabeth, N.J.

Most maleic producers don't show much worry about overcapacity. They generally regard the increasing

maleic production potential as healthy, "planned" overcapacity. PC&C apparently believes that opportunities in the maleic business significantly outweigh competitive problems.

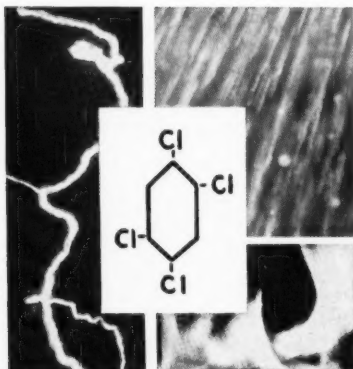
Says one maleic marketer: "There will be some overcapacity, and we will just have to fight harder for markets."

Fumaric acid prospects must influence PC&C's outlook on maleic. The firm now recovers fumaric as a by-product of phthalic anhydride production. It could also make it directly from maleic anhydride, as National Aniline (division of Allied Chemical) does. Hence, comparison of the nation's maleic capacity/demand situation should include a look at future fumaric markets (*CW*, Nov. 15, '58, p. 97).

**Polyesters Push Ahead:** The polyester resin market, top maleic con-

# BRIEFS

on a new way to look at tetrachlorobenzene...some facts about phosphoric anhydride...a better grade of lauryl chloride...the care and packaging of caustic potash



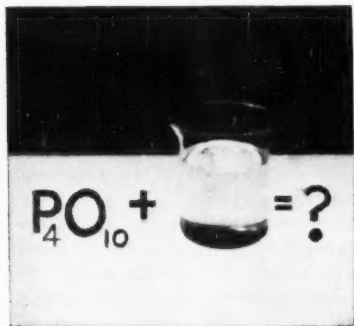
## Chlorocarbon-of-all-trades

When you're looking for the stability, the resistance to fire and moisture, or the electrical properties of chlorinated aromatics, take a long look at our 1,2,4,5-tetrachlorobenzene.

Here you have a compound that's 65.7% chlorine, with a molecular weight of 215.9; a compound you can dissolve in most anything but water.

It's easy to handle. A white crystalline solid with very little odor.

It has many more interesting properties, all of them given in the technical data sheet offered in the coupon.



## Is phosphoric anhydride more than a thirsty powder?

Stick to the textbooks and you'll write off our phosphoric anhydride  $P_2O_5$  ( $P_4O_{10}$ ) as just a rather strong desiccant.

Keep an open mind, though, and like many you may find it useful as a highly pure carrier of phosphorus, useful as an intermediate.

A typical analysis shows the Hooker product to be 99.5% pure  $P_4O_{10}$ . No trioxide. No chlorine. Barely a trace of iron, lead, and fluorine. 11 ppm arsenic—hardly enough to write home about.

We use a lot of this compound to make our own phosphorus chemicals. We also get calls for it for use in pharmaceuticals, dyes, insecticides, and even as a catalyst. In the light of all this, would you like to send the coupon for a technical data sheet?

## Looking for lauryl chloride that's a little bit better?

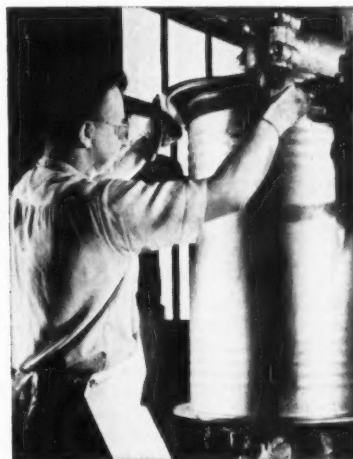
Would you like to work with a lauryl chloride that's clear and colorless and has a *minimum* of 16% chlorine?

Those are the specs on our special *high grade*. It's an oily liquid with the faintest of odors.

Analysis shows it to be a mixture of n-alkyl chlorides ranging from  $C_{10}$  through  $C_{14}$ . The  $C_{12}$  fraction predominates and accounts for about 80% of the compound.

For many purposes, of course, you'll find our *technical grade* every bit good enough. Its specs read about the same, except that the chlorine content drops to 15.5% and the product has a slight color—up to 2.5 ASTM, to be exact.

For data on both grades, send the coupon.



## Caustic potash—custom package at standard price

Expose it to air and anhydrous caustic potash soaks up moisture and carbon dioxide until it becomes weak and slow-acting.

To help you avoid this and to protect the inherent purity of our Nialk® caustic potash, we make our own containers to our own carefully controlled specifications.

You can get this pure and well-protected compound in any of seven forms at 90% strength, or in flake and solid at 85%. If you prefer the liquid, we have that, too, in strengths from 45% to 52%.

Check the coupon for full details.

For more information, check here and mail with your name, title, company, and address.

- |   |  |
|---|--|
| <input type="checkbox"/> Phosphoric Anhydride                 | <input type="checkbox"/> Lauryl Chloride |
| <input type="checkbox"/> 1,2,4,5-Tetrachlorobenzene           | <input type="checkbox"/> Caustic Potash  |
| <input type="checkbox"/> General Products List Bulletin 100-B |  |

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## MARKETS

### Breaking Down Maleic Anhydride End-Uses (million pounds, estimated)

	'57	'58	'59	'60	'63	'65
Polyester resins	16	18	21	24	32	38
Alkyd coating resins	15	14	15	15	16	17
Agricultural chemicals	6	6	6.5	7	8.5	9
Exports	5	4	3	2	0	0
Paper size	3.5	3.5	3.5	4	4	4
Drying oils	2	2	2	2	2	2
Plasticizers	0.5	0.5	0.5	0.5	0.6	0.6
Miscellaneous	1.0	1.0	1.5	1.5	2.9	4.4
Total	49	49	53	56	66	75

sumer, is the key to maleic's future growth. Although other applications now collectively take the largest share of total maleic, their individual demands pale by comparison with polyesters'. Exception: alkyd coating resins, which only recently were pushed into second place as maleic users.

An estimated 18 million lbs. of maleic anhydride went into polyester resins in '58. This compares with 14 million lbs. used in making alkyd coating resins and 6 million lbs. for agricultural chemicals. Volume for all other applications was much smaller (chart, above).

And polyester resins' lead as a maleic consumer will widen rapidly—for two reasons: (1) uses for the resins themselves are expected to increase at a brisk pace; (2) demand by other maleic-consuming industries will remain static or increase only at moderate rates.

Of the total 75-million-lbs. maleic consumption expected in '65, almost half—38 million lbs.—will be used to make polyester resins. Demand for maleic in alkyd coating resins will increase only slightly—perhaps 2 million lbs.—to 17 million lbs. by '65. Agricultural demands for maleic will increase about 30%, to an estimated 8.5 million lbs. by '63, may edge up to 9 million lbs. or more by '65. Maleic exports, about 5 million lbs. in '57, will probably be far less by '63, because of stepped-up activity by foreign producers.

Because fumaric acid is an isomer of maleic, it will continue to have direct competitive impact on maleic,

especially in polyester formulations. But this competition will, of course, be softened in proportion to the amount of fumaric that is made from maleic anhydride, as opposed to material recovered in phthalic production.

The bulk of unsaturated polyesters will continue to be made from maleic, largely because of higher price. Fumaric, however, remains a market factor—in certain uses, it imparts special properties to polyester resins (e.g., resistance to heat distortion). Because of this specialized role, it's difficult to forecast fumaric demand.

Total fumaric acid used in polyester resins, alkyds, and various other uses is estimated at 10 million lbs., in '58, by one industry source; of this, 4 million lbs. went into polyester resins, 3 million lbs. each into alkyd-resins and "other" uses.

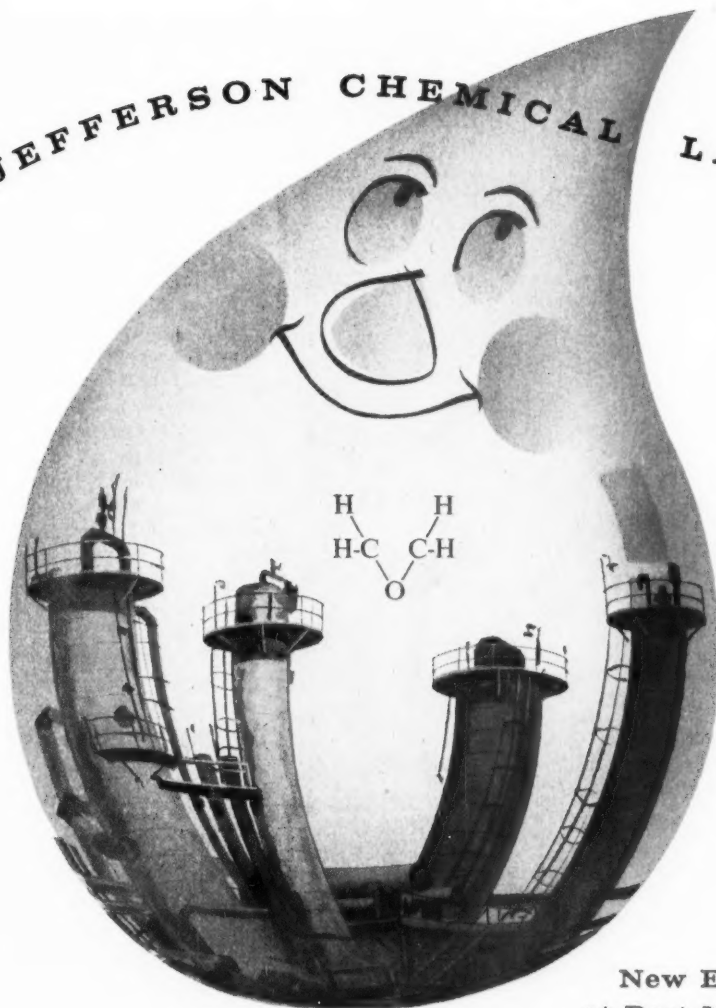
Area of greatest growth for fumaric—as for maleic—will be in polyester resin applications; demand for this use is expected to reach 6 million lbs. by '60, 10 million lbs. by '65. Fumaric consumption for alkyd resins is expected to remain at 3 million lbs./year throughout this period, while consumption for "other" uses will climb to an estimated 5 million lbs. by '60, 7 million lbs. by '65. It adds up to a likely doubling of fumaric acid demand, to 20 million lbs./year, in the next seven years. Although the demand growth expected for fumaric isn't spectacular, it will have an increasing—and noteworthy—impact on maleic.

**Side-Line Contenders?** Although



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LAUNCHES...



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ETHYLENE  
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**New Ethylene Oxide Plant  
at Port Neches, Texas Employs  
Direct Oxidation Process**

This week's good news to the ethylene oxide market includes announcement of additional on-stream capacity for some 60 million pounds per year of this versatile intermediate. Capacity of the new Direct Oxidation plant added to the existing Chlorohydrin process permits Jefferson to serve aggressively new markets for ethylene oxide, as well as expand its markets for principal derivatives.

Following closely on the announcement of a 200% increase in ethylene capacity, this new plant located at Port Neches, Texas, is part of Jefferson Chemical's

major expansion program begun two years ago and now virtually complete. The over-all program provides for doubling output of ethylene glycol, production of chlorine and caustic soda and entry into new product markets based on expanded ethylene and propylene production.

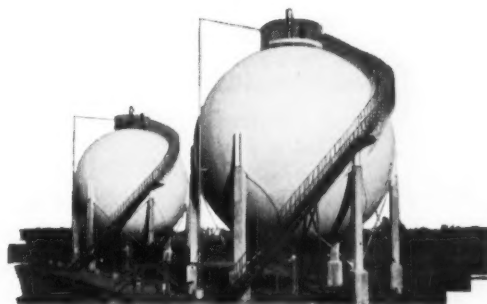
A comprehensive technical bulletin, *Ethylene Oxide*, is available from Jefferson Chemical Company, 1121 Walker Avenue, Houston 2, Texas.

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## MARKETS

polyester resins have been successfully touted for reinforced-plastics uses (they go into more than 95% of all reinforced materials), new stirrings in the plastics industry point to rougher competition from other materials—e.g., epoxy resins and phenolics. But these competitive materials will have to fight hard to wrest the basic advantage from polyesters, whose growing popularity is repeatedly evident in annual production statistics. For example, in a recent year-end report (*CW Market Newsletter*, Jan. 10), the Society of the Plastics Industry estimates that polyester production leaped 20% in '58. In comparison, phenolic production fell off 5%.

Epoxy resins now constitute no real threat to polyesters in the reinforced-plastics field, but this might well change. One reason: epoxy producers, beset by oversupply problems of their own, will be digging hard for new applications to put the industry on a more stable supply/demand basis (*CW*, Dec. 13, '58, p. 73). Epoxies already have a toe hold in the reinforced-plastics business, especially in applications for aircraft, missiles, tanks, ducts, pipe, electrical panels, tooling, architecture. Phenolics go into aircraft, missiles and electrical parts; acrylics—another contender—are used in sheeting and paneling.

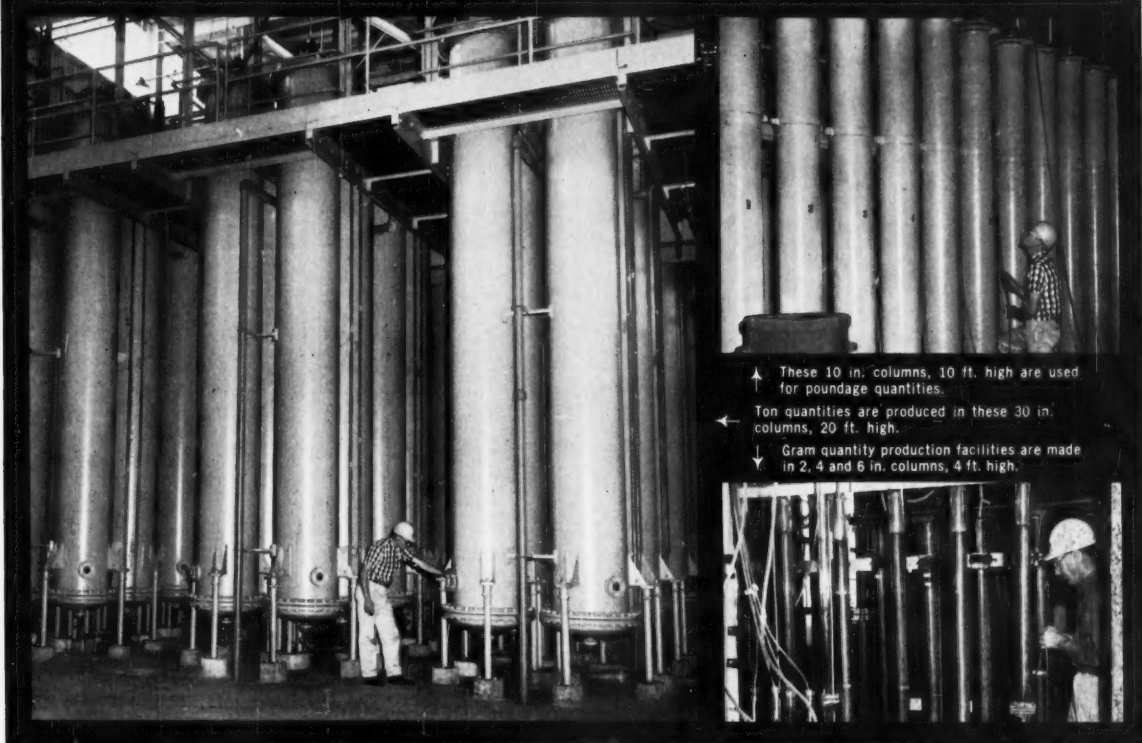
Uncertain impact of competitive materials and demand fluctuations in markets closely tied to the nation's general economy stymie long-range forecasts of polyester resin consumption—hence maleic demands. But it's fairly certain that the resin uses—in the form of reinforced plastics—will increase in boat and automotive manufacturing. Each took 19.5% of the total resins consumed in '57; by '65, each will likely account for 25%.

On the other hand, it's forecast that use of polyester for flat and corrugated panels will drop off, from 23% in '57 to 17% in '65. The "all other uses" category will also decline, from 38% in '57 to 33% in '65.

Although briskly moving polyester resins will brighten maleic anhydride's future, it's clear that the business each maleic marketer captures will depend to a significant extent on the effectiveness of his sales effort. And the intensity of the coming market scramble will determine how long U. S. overcapacity will last.

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← Ton quantities are produced in these 30 in. columns, 20 ft. high.

↓ Gram quantity production facilities are made in 2, 4 and 6 in. columns, 4 ft. high.

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**Price Changes:** Our facilities have enabled us to initiate many of the consistent and dramatic price reductions which have occurred in this field. Two years ago, for example, lutetium and thulium oxides were selling at from \$100 to \$125 a gram. Over a year ago, Michigan Chemical reduced the price of these materials below \$30 a gram. Now our price is \$4.50 a gram in pound quantities. In our role of leading producer, we are continuing every price effort to open the way for more and more research and product applications for these challenging compounds and metals.

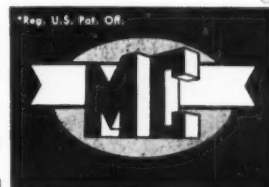
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*Rare Earths and Thorium Division*

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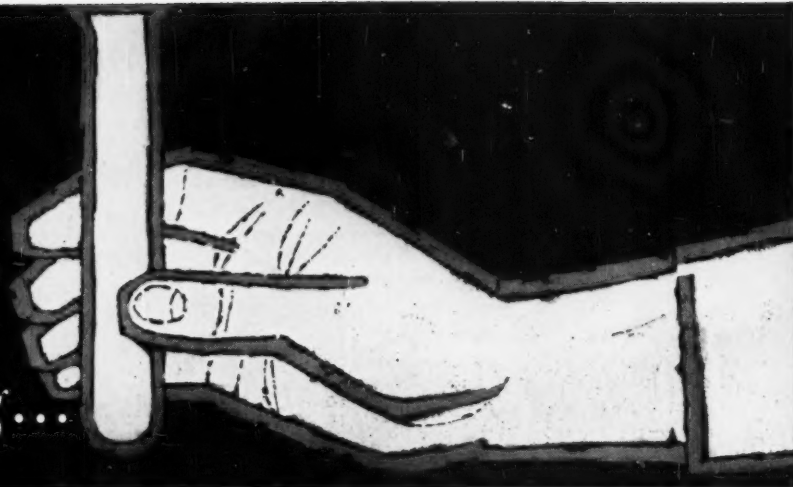
PRASEODYMIUM • NEODYMIUM • SAMARIUM • EUROPIUM • GADOLINIUM • TERBIUM • DYSPROSIUM • HOLMIUM • ERBIUM • THULIUM • YTTERBIUM • LUTETIUM • YTTRIUM

January 17, 1959 • Chemical Week

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**Pfizer**

# Chemicals for Metal Finishing...



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Citric Acid	✓	✓	✓	✓	✓	✓	✓	✓	
Sodium Citrate	✓	✓		✓		✓			
Ammonium Citrate	✓	✓	✓	✓					
Gluconic Acid	✓	✓	✓	✓				✓	
Glucono Delta Lactone	✓	✓	✓	✓				✓	
Sodium Gluconate	✓	✓		✓				✓	
Oxalic Acid	✓	✓	✓	✓	✓		✓	✓	
Ammonium Oxalate	✓	✓		✓					
Ferric Ammonium Oxalate									✓
Tartaric Acid	✓		✓	✓				✓	
Tartar Emetic				✓					
Rochelle Salt			✓	✓					
Cream of Tartar	✓			✓					

## Citric Acid...

Nontoxic, mild, yet chemically active against scale and tarnish. Used extensively in the formulation of general metal cleaners and polishes, particularly household products.

## Sodium Citrate...

A preferred ingredient in electrolytic nickel baths, resulting in a brighter plate. Also finds wide use in electroplating processes.

## Ammonium Citrate...

Especially useful for the removal of rust in near neutral solutions. Extremely mild and safe to handle.

## Gluconic Acid...

An excellent sequesterant in alkaline derusting solutions; provides rust-free, clean surface ready for further treatment.

## Oxalic Acid...

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tropolishing and as an ingredient in general metal cleaners.

## Ferric Ammonium Oxalate...

Used extensively in the production of light-fast gold colored aluminum.

## Tartaric Acid...

Excellent complexing agent for copper in electroplating.

## Tartar Emetic...

Used in electrolytic baths for deposition of silver and antimony alloys on brass, copper and steel surfaces.

## Rochelle Salt...

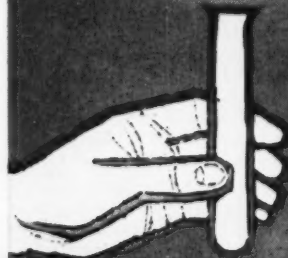
Increases efficiency and yields finer-grain deposit in alkaline copper plating.

## Cream of Tartar...

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# SPECIALTIES



Wynn Oil's Gleason and Wynn: Additive makers turn air-minded.

## Wynn's Out to Win Its Wings

In the next few months, makers of specialty products for the aviation industry will have a new competitor. Wynn Oil Co., (Azusa, Calif.), maker of "frictionproofing" auto specialties, will try to get an aviation fuel conditioner off the ground.

If the company convinces plane owners that fuel additives are able to boost engine efficiency, it should be a formidable challenger in the field. In '58, the 11-year-old closed corporation had its best year—and President Carl Wynn last month told distributors that '59 sales should top '58's by about 20%.

Wynn refuses to give any dollar figures concerning annual sales, says, "We're watched so closely by competitors we don't even give those figures to Dun & Bradstreet." Considering the number of its employees and its advertising budget (around \$1 million), *CW* estimates Wynn's sales are about \$10 million/year.

**Products and Plants:** In selling fuel additives, good reputations are hard to build, but Wynn Oil has been able to establish a remarkably stable and valuable image.

Now, besides adding the aviation item, the company has plans to widen its sales areas even further. Last August, the Belgian government approved plans to establish a full-line manufacturing facility in Antwerp, Wynn's first overseas plant. When it's onstream, it will supply Wynn distributors in Europe and Scandinavia.

The company already has a blending plant in Mexico City, a manufacturing facility in Toronto, and plans are being drawn for operations in Tokyo and Madrid.

The current widely scattered operation is a vast change from the company's unpretentious start. In '39, Chestien Wynn, a 70-year-old retired attorney whose avocation was chemistry, became fascinated with the possibilities of developing a formula to increase the efficiency of internal combustion engines.

He hand-mixed various materials in the kitchen of his Wilma, Calif., home until his apprehensive family persuaded him to move his experiments to the one-car garage. By '45, he felt he had a workable product and called it Wynn's Friction Proofing Oil. At the same time, he registered the red-and-black bull's-eye which is the company's trademark.

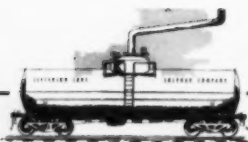
By '46, production had grown to the two-car-garage stage, and Carl Wynn joined his father in a partnership. A year later, Wynn Oil was set up, capitalized at \$70,000, of which father and son each contributed half. In '50, when Chestien Wynn retired, he sold his shares for \$367,500. Today, Carl Wynn and his wife Bee, who serves as vice-president, hold controlling interest.

**Unique Claim:** Carl Wynn claims that his products (there are now 29) differ from other additives in that they're really "metal conditioners"—they seal metal surfaces, decreasing friction between moving parts—rather than oil or gasoline conditioners.

S. I. Gleason, Wynn's research head, gave this guarded description of the material: "Compositionally, Wynn's frictionproofing products are a combination of petroleum hydrocarbons and petrochemicals, including some metallo-organic compounds that react chemically with strongly polar metal surfaces to produce a type of surface immunization. Under frictional conditions, these metal surfaces are quickly converted by the chemical in Wynn's Friction Proofing from their metallic form into nonmetallic compounds that have low shear strength and which will plastically deform at relatively low temperatures." The physical thickness of this protective surface is said to be unimportant, because as a metal surface is exposed, the chemical reaction quickly produces the nonmetallic compounds. In this way, metal-to-metal contact is prevented under boundary lubrication conditions, he says.

These products are packaged in various sizes of containers, depending on their market. Four-ounce to quart-size containers go to the automotive market, 1- to 5-gal. drums to industrial users, 1-gal. cans to farmers. Wynn favors selling its products—virtually all the same thing—in different con-

\*At left, S. I. Gleason, director of Wynn Oil's research and development; right, Carl Wynn, president of the company.



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## SPECIALTIES

tainers for different uses, rather than using one package with wide claims for many uses.

Next year, Wynn plans to step up sales in products for the farm—they contribute least to the firm's current sales. There will also be efforts to increase sales to companies with missile contracts. (Although Convair at San Diego and Aerojet-General at Azusa are buying Wynn products, they won't tell Wynn how they're using them.)

While there's little scientific endorsement—and a great deal of criticism—of oil additives, the future appears nonetheless rosy for Wynn. As long as the automobile owner tries to increase his auto engine's efficiency, the field of fuel additives should remain a lucrative one.

## Weed Control Confab

While the season's coldest winds howled outside, some 500 representatives of industry, government and agricultural colleges gathered in New York's Hotel New Yorker last week to discuss the best way to combat weeds. Occasion: the 13th annual meeting of the Northeastern Weed Control Conference.

Here are the high points of the three-day meeting:

R. D. Sweet and Vincent Rubatzky, of Cornell, reporting on study of some of the newer herbicides' effect on tomato crops, found that Niagara Experimental No. 4512 offers promise as a postemergence spray with excellent activity against emerged broadleaved weeds. Field-grown seedlings and transplants, they said, showed

remarkable tolerance of 4512. Neburon, Simazine and Vegadex looked promising on transplants as weed preventatives, and Vegadex and neburon looked good on field-seed tomatoes.

E. M. Rahn, of Delaware, reported a cheaper method of controlling annual grasses and broadleaf in sweet corn than the common practice of applying DNB (amine salt of 4, 6-dinitro-*o*-secondary-butylphenol). By using  $\frac{3}{4}$  lb./acre of amine triazole in place of DNB amine, the plant stand and yield was about the same but the cost was reduced from about \$5.20 to \$3.40/acre.

J. M. Bennett, of Canada's Hydro-Electric Power Commission, reporting on developments in the chemical control of conifers, said that in field trials TCA (trichloroacetic acid, sodium salt, 79.3% acid equivalent) had proved to be the most consistent and economical material. Good results were also achieved with dalapon (2,2-dichloropropionic acid, sodium salt, 74% acid equivalent).

Reporting on recent developments in phragmite (common reed) control, John Steenis, of the U.S. Fish and Wildlife Service, said that tests in '58 had shown that on dry sites a mixture of dalapon at 10 lbs./acre and amitron at 2 lbs./acre proved most effective and least expensive control. For wet sites, the same combination at higher concentrations (25-30 lbs./acre and 4-5 lbs./acre) gave the best control.

Outlining some recent studies at Cornell University on pre- and post-emergence crabgrass control, Robert

## NEEDED: FIVE NEW AG CHEMICALS

*These targets for agricultural chemical makers were highlighted at last week's Northeastern Weed Control Conference.*

- 1—DEBARKING AGENT—efficient, economical-to-use chemical free of hazards of sodium arsenite treatments.
- 2—AQUATIC HERBICIDE developed for this use and not merely a "hand me down" from other herbicide applications.
- 3—JAPANESE HONEYSUCKLE TREATMENT that will kill this vine on one application for a cost of about \$25/acre.
- 4—TOPSOIL WEED KILLER for roadbeds—would be applied soon after bed is put down, to permit immediate seeding.
- 5—ALL-SEASON HERBICIDE in a water carrier, eliminating oil sprays for late-season treating of woody brush.

# OXYGEN IS FACTOR IN BREAKDOWN OF MANY DIFFERENT PRODUCTS

Causes Rancidity, Gum-Formation,  
Embrittlement, Discoloration

## USE OF ANTIOXIDANTS IS GROWING

Reports from agricultural and industrial fields indicate increased recognition of ubiquitous oxygen as a destructive threat to products containing fats, oils, waxes, hydrocarbons, plastics or rubber. Oxidation manifests itself in a variety of ways...as rancid lard, stale potato chips, unpalatable animal feed, gummed up gasoline, and cracked tire sidewalls. To combat the attack of oxygen, many companies are turning to antioxidants. Addition of these inhibitors in only very small amounts provides long-lasting protection against oxidative deterioration.

Lard is typical of food products needing protection against oxygen. Antioxidants effectively and economically retard decomposition that would otherwise result in poor color, aroma, taste or texture. Similarly, in baked products such as crackers, and in fried foods such as potato chips, antioxidants inhibit product deterioration, making complaints of rancidity a thing of the past.

Shelf life is increased when antioxidants are added to a fat-containing food, permitting distribution to be broadened to markets previously inaccessible.

Typical of the increasing importance of antioxidants is their role in helping to develop an entirely new outlet for inedible fats and oils...animal feed. By stabilizing the fats in the feed and thus keeping the feed fresh and palatable, antioxidants were instrumental in creating a market for more than 300 million pounds of fats annually.

Antioxidants are used to retard formation of power-robbing gums in automotive gasoline and jet fuels. In transformer and turbine oils, antioxidants prolong the useful life of the oils by increasing their resistance to high-temperature oxidative reactions that build up sludge. Lower maintenance costs resulting from their use are an extra benefit for the electrical industry.

In the field of plastics, antioxidants are effective in protecting molded and extruded polyethylene against deterioration during both processing and use.

Rubber products also need protection against oxygen...actually against ozone, one of the most powerful and insidious oxidizing agents known. Even minute concentrations in the atmosphere can severely damage rubber products in a short time. To retard the cracking and checking caused by ozone, rubber processors depend on antioxidants.

In the field of agriculture, antioxidants extend the usefulness of insecticide formulations. In poultry feeds antioxidants help chicks to mature faster by protecting vitamin content, stimulating growth,

improving pigmentation, and preventing certain deficiency diseases.

The best advice this report can give to manufacturers seeking to protect their products against the attack of oxygen is to seek out a leading supplier of antioxidants, for example, Eastman Chemical Products, Inc., as their laboratories are staffed with antioxidant specialists, ready to help you explore the benefits, use and cost of antioxidants in your product. Moreover, because Eastman manufactures all the principal antioxidants used

### Products in these fields know the value of Eastman antioxidants

Food	Insecticides
Rubber	Animal Feeds
Plastics	Hydraulic Fluids
Petroleum	Transformer Oils
Vegetable and Animal Oils	

commercially and have years of experience in this field, they are in the best possible position to offer unbiased constructive advice. You can get more information on the proper use of antioxidants by writing Eastman Chemical Products, Inc., subsidiary of Eastman Kodak Company, Kingsport, Tennessee.

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must combat  
oxidative  
deterioration...

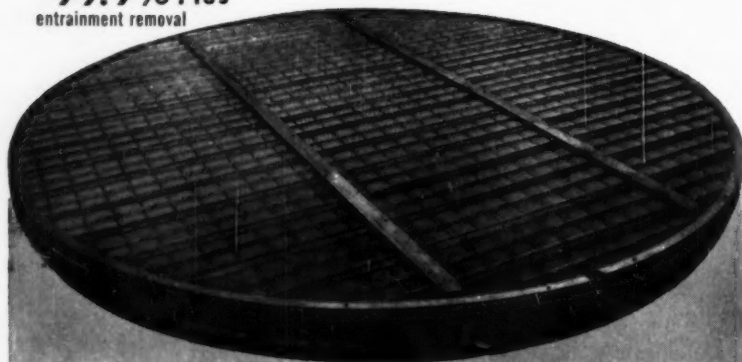
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## SPECIALTIES

Mower and John Cornman found the pre-emergence treatments now available none too effective. Of the material now being promoted for this purpose, they found Pax (lead arsenate, arsenous oxide, chlordane), which gave 31% control, and chlordane, which gave less than 25%, the best of those tested. Alanap IF (N-1 naphthyl phthalamic acid plus urea), Crag Herbicide 1, and Ortho Lawn Pep were all found ineffective. For postemergence control, disodium methylarsonate, ammonium methylarsonate and PMA (10% phenyl mercuric acetate) gave 90% control. Potassium cyanate gave 65%. Darmethene, Niagara 4562, G106, G100, U-9612 and U-9613, they said, produced either intolerable turf injury or very little crabgrass control.

On the business side, Jack Dressen, of the NACA, pointed up the lack of adequate specification for purchasing various herbicide materials and proposed as a guide for such specifications the Interim Federal Specification for Herbicide 2,4-D.

## Johnson Tries Syndets

Latest company to introduce a liquid household detergent cleaner is S. C. Johnson. The new product, now in Pittsburgh for test-marketing, is called Bravo and is being offered in two sizes, 14 and 26 oz. The smaller size (both are packaged in plastic bottles) sells for about 47¢; the larger for about 77¢.

Another Johnson product, Blue Chip germicidal cleaner, is being test-marketed for consumer use. It's a quaternary ammonium material that is now sold to the industrial market.

## PRODUCTS

**One-Part Epoxy:** Isochem Resins Corp. (Providence, R.I.) is now offering a 100%-solids epoxy adhesive. It's a one-package product, tradenamed Isobond 331, requires no mixing or metering. Curing time: 2½ hours at 250 F or 15 minutes at 335 F. Shelf-life: approximately six months at 70 F. Shear strength to aluminum: 3,000 psi.

**New Cationic:** Armour & Co.'s Chemical Division (Chicago) is offering a new cationic surface-active agent, RD-2973-P. It's a 40%-active isopropanol solution soluble in water,

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- Malononitrile
- 2-Mercaptothiazoline
- 3-Methylthiophene
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### for synthetic latex paints

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### for paper manufacture

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### PHYSICAL PROPERTIES

Tributyl Phosphate is an odorless and colorless liquid, is miscible with most common organic solvents, and is a good solvent for a variety of other materials. It has a surprisingly low melting point for such a high-boiling liquid.

Molecular Weight:	266.316 (calc.)
Boiling Point at 27 mm:	177°C-178°C
Freezing Point:	< -80°C
Density at 20°C:	0.982
25°C:	0.978
Weight per U.S. Gallon at 68°F:	8.19 lb.
Coefficient of Expansion:	9.00093 per 1°C 0.00052 per 1°F
Refractive Index, $n_D$ at 20°C:	1.424
25°C:	1.422
Viscosity at 25°C:	3.41 centipoise
85°F:	38.6 Saybolt seconds
Latent Heat of Vaporization:	55.1 cal/g
Specific Heat:	0.43 cal/g
Dielectric Constant at 30°C:	7.97
Flash Point, Cleveland Open Cup:	249°F
Solubility in Water at 25°C:	6.55% by volume
Solubility of Water in Tributyl Phosphate at 25°C:	< 1% by volume



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## SPECIALTIES

benzene, hexylene glycol and carbon tetrachloride. Pour point is below 0 F. In cooling water, the material gave total growth inhibition of algae at concentration of 0.01-0.02%.

**PVP Addition:** Antara Chemicals Division of General Aniline & Film (New York) is introducing a low-molecular-weight polyvinyl pyrrolidone. The product is called PVP K-15, is a white powder of 10,000 average molecular weight. Antara claims the new product is an effective dispersant for cosmetics, detergent systems, pigment formulations. Initial commercial price: \$1.50/lb.

**Hot-Spray Vinyl:** Gates Engineering Co. (Wilmington, Del.) has a new hot-spray vinyl, tradenamed Gaco V-80, that yields a 5-mil coating on a single spray application. It may be applied with any standard hot-spray apparatus that includes circulatory system and spray gun.

**Heat-Resistant Paint:** Chem Industrial Co. (Brooklyn, O.) is offering heat-resistant paint in aluminum, gold, metallic red and metallic blue. The paint is said to resist temperatures up to 1700 F without flaking, blistering or burning. It's applied by brush or spray, air-dries in 30 minutes. Tradename: Extra High.

**Cool Cutting:** The American Society of Tool Engineers has just published findings of a two-year research project (at MIT) on the cooling characteristics of cutting fluids. The 50-page document, Research Report 19, is available from ASTE (10700 Puritan Ave., Detroit) for \$1.50.

**Latex for Textiles:** Manufacturers Chemical Co., Inc. (Philadelphia), has come up with a new latex formulation for textiles, especially adaptable to loosely woven fabrics such as carpets. Dubbed MCC-100, the new formula is said to have high resistance to gas fading, good resistance to light degradation and oxidation and to show little discoloration by copper-containing dyes. About 4 to 5 oz./linear yd. will produce a firm backing, Manufacturers Chemical says.

**Changes Names:** Two new tradenames have been adopted by Du Pont for neburon and fenuron, mem-

bers of the family of substituted urea herbicides. The new tradename Kloben now identifies neburon weed killers (formerly known as Karmex N) and Dybar now applies to fenuron weed and brush killers (formerly known as Karmex FP). Du Pont is also changing its trademarks Karmex and Telvar for the diuron and monuron compounds. Telvar will now identify only those products based on monuron and Karmex will identify only those products based on diuron. To date, the name Karmex has distinguished all agricultural herbicide formulations of the substituted urea herbicides.

**Adds TBH:** Cadet Chemical Corp. (New York) has just added tertiary butyl hydroperoxide to its line of organic peroxides. TBH, now available in commercial quantities, is suggested as a catalyst in emulsion polymerizations of vinyl monomers, polyesters, styrene and methacrylates.

**New Violet:** American Cyanamid Co. has a new bluish vat violet dye for cottons and rayons. Cyanamid calls the new dye Calcoloid Violet BNC Double Paste, says it produces solid shades that are stable to ironing, pleating and water-spotting.

**Potato and Tomato Fungicide:** Miller Chemical & Fertilizer Corp. (Baltimore, Md.) is now offering Miller 658 fungicide for control of early and late blights of potatoes and tomatoes. The material is claimed useful on watermelons and peppers. Miller manufactures and distributes the material under a license from Union Carbide Chemicals.

**Slippery Metal:** Cleveland Graphite Bronze Division, of Clevite Corp. (Cleveland) has a new high-temperature material available for test and evaluation programs in sleeve-bearing and seal applications. Called Clevite 300, the material is said to have excellent antifriction properties, has shown a coefficient of friction less than 0.075 at temperatures up to 1200 F running at 150 ft./minute surface speeds. It's designed for fabrication by powder-metallurgy techniques, is an iron-base metallic compound. Though it runs best against itself, CGB says it can also be used satisfactorily with materials such as 52100 steel.

## Tracers

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CHEMICAL  
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### POSITIONS VACANT

**Sales Development: Chemistry or Chemical Engineering degree, 2 to 3 years industrial laboratory or technical service work. Send resume and salary requirements to: Director, Technical Personnel, Heyden Newport Chemical Corp., 342 Madison Ave., New York 17, N.Y.**

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**Rotary Kilm, 7'6" dia. x 100' long, 1/2" riveted shell, tires, trunnions, gear & pinion, motor, etc. Perry, 1415 N. 6th St., Phila., Pa.**

**Stainless Steel Spray Dryer, Turbulaire type N-2EBC, Size #425E, electric heating. Perry Equipment Corp., 1415 N. 6th St., Phila. 22, Pa.**

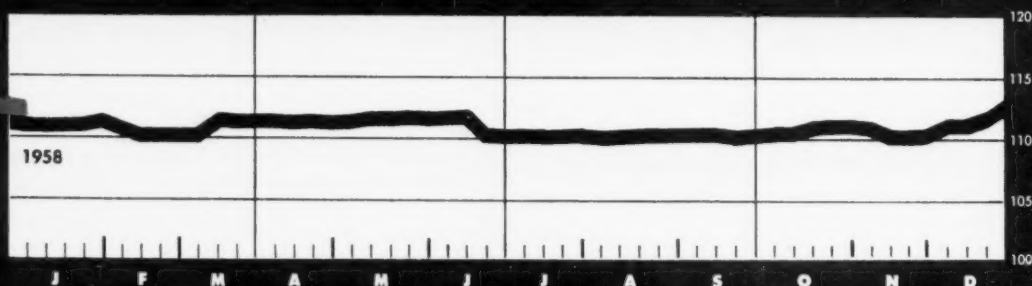
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'59 OUTPUT INDEX



'59 PRICE INDEX



JANUARY 17, 1959

**WEEKLY BUSINESS INDICATORS**

Chemical Week output index (1947-49=100)  
Chemical Week wholesale price index (1947=100)  
Stock price index (11 firms, Standard & Poor's)  
Steel ingot production (thousand tons)

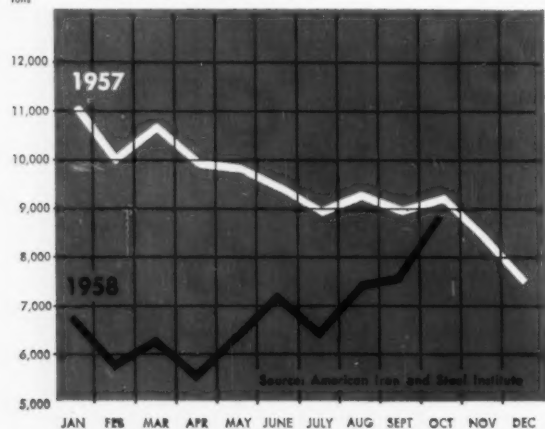
Latest Week	Preceding Week	Year Ago
192.5	190.5	186.0
111.9	111.8	111.1
48.57	49.76	40.26
2,109	2,058	1,515

**MONTHLY INDICATORS—Production**

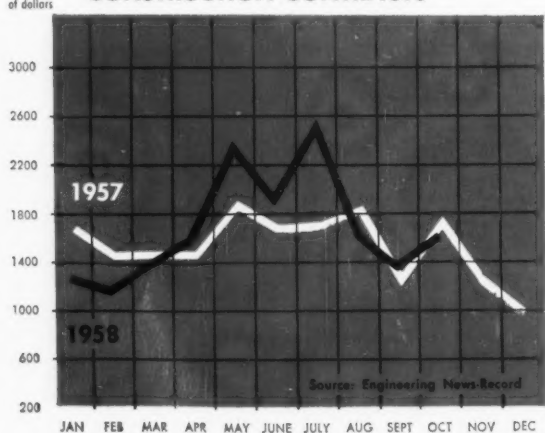
All manufacturing  
Nondurable goods manufacturing  
Durable goods manufacturing  
Chemicals and allied products  
Industrial chemicals  
Petroleum and coal products

Latest Month	Preceding Month	Year Ago
146	145	144
138	141	131
154	149	156
192	193	187
208	202	203
140	137	136

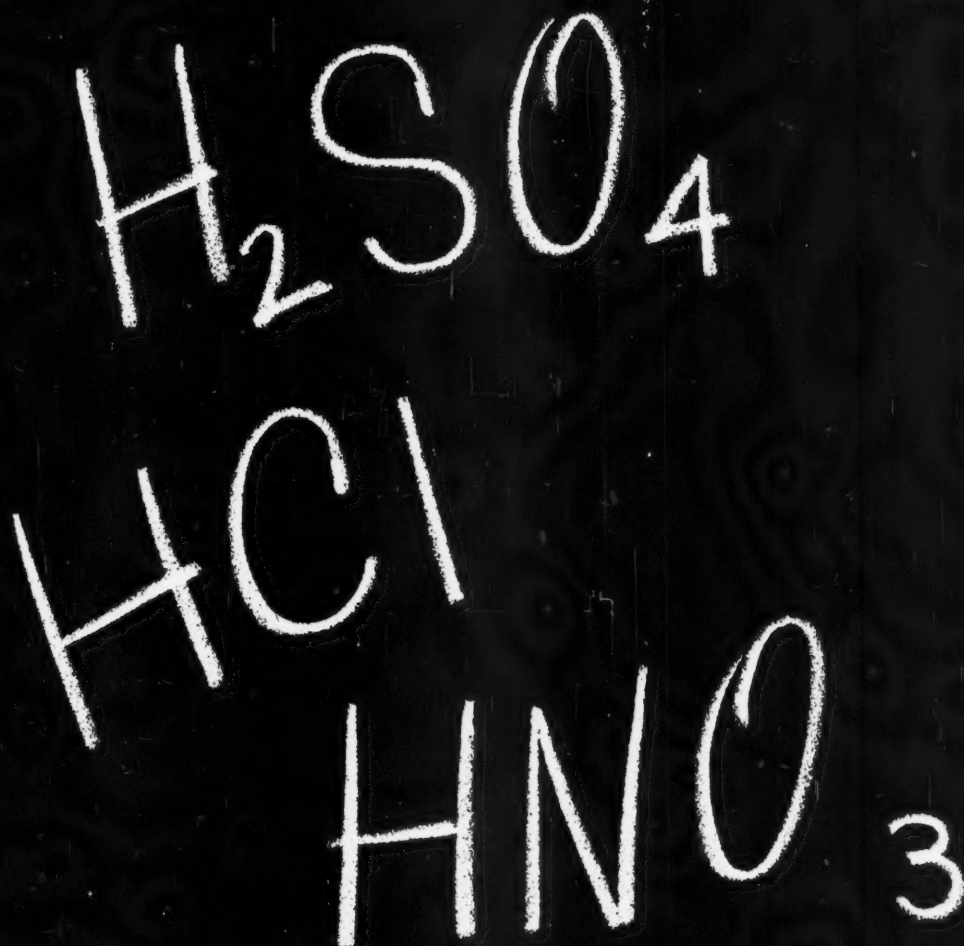
**STEEL PRODUCTION**



**CONSTRUCTION CONTRACTS**







## BASIC SERVICE ON MINERAL ACIDS FROM CYANAMID

Basic service on basic bulk products is of vital importance *to you* in keeping production costs at a minimum . . . and at Cyanamid, quantity and delivery are inherent in basic service on mineral acids.

Centrally located shipping points put our basic acid service close to your consuming plant. A phone call will bring you the right acid, at the right strength, in the package and quantity you desire.

If you are not already aware of the excellence of Cyanamid's service, why not make that call now. Your local Process Chemicals Department salesman will be glad to put our basic service on mineral acids to the test.

Sulfuric Acid  
Nitric Acid  
Oleum

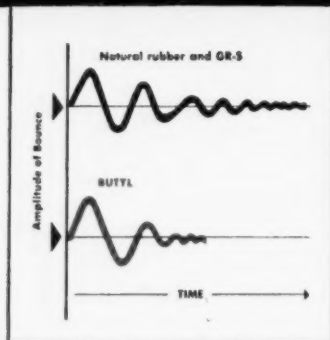
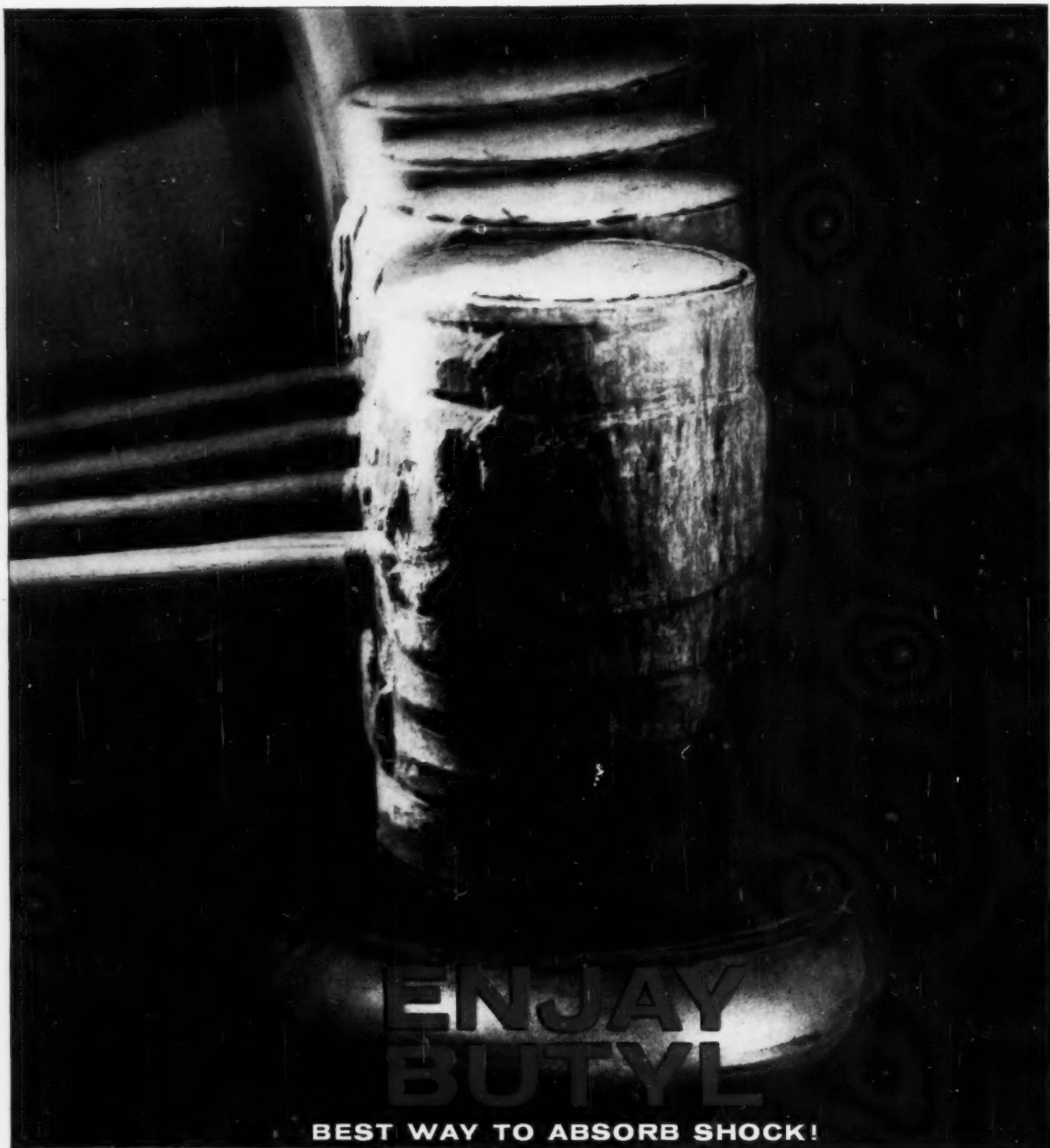
Battery Electrolyte  
Muriatic (Hydrochloric)  
Mixed Acids



**AMERICAN CYANAMID COMPANY**

PROCESS CHEMICALS DEPARTMENT  
30 Rockefeller Plaza, New York 20, New York

In Canada: Cyanamid of Canada Limited, Montreal and Toronto



Butyl's superior shock absorption characteristics reduce amplitude of bounce in much less time as compared with other rubbers.

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Butyl *also* offers outstanding resistance to weathering and sunlight...chemicals...heat...abrasion, tear and flexing...unmatched electrical properties and impermeability to gases and moisture.

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